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PUBLISHED BY SCHOLASTIC INC.

SEPTEMBER 1986

VOLUME 4
NUMBER 9

**FREE
ORIGINAL PROGRAMS**

**3rd
Anniversary
Issue**

FAMILY COMPUTING

Word Processing: Add-Ons to Improve Your Writing

The Big Plus of
Desktop Publishing

Tips to Start the
School Year Right

Make Life Easier
With a Modem

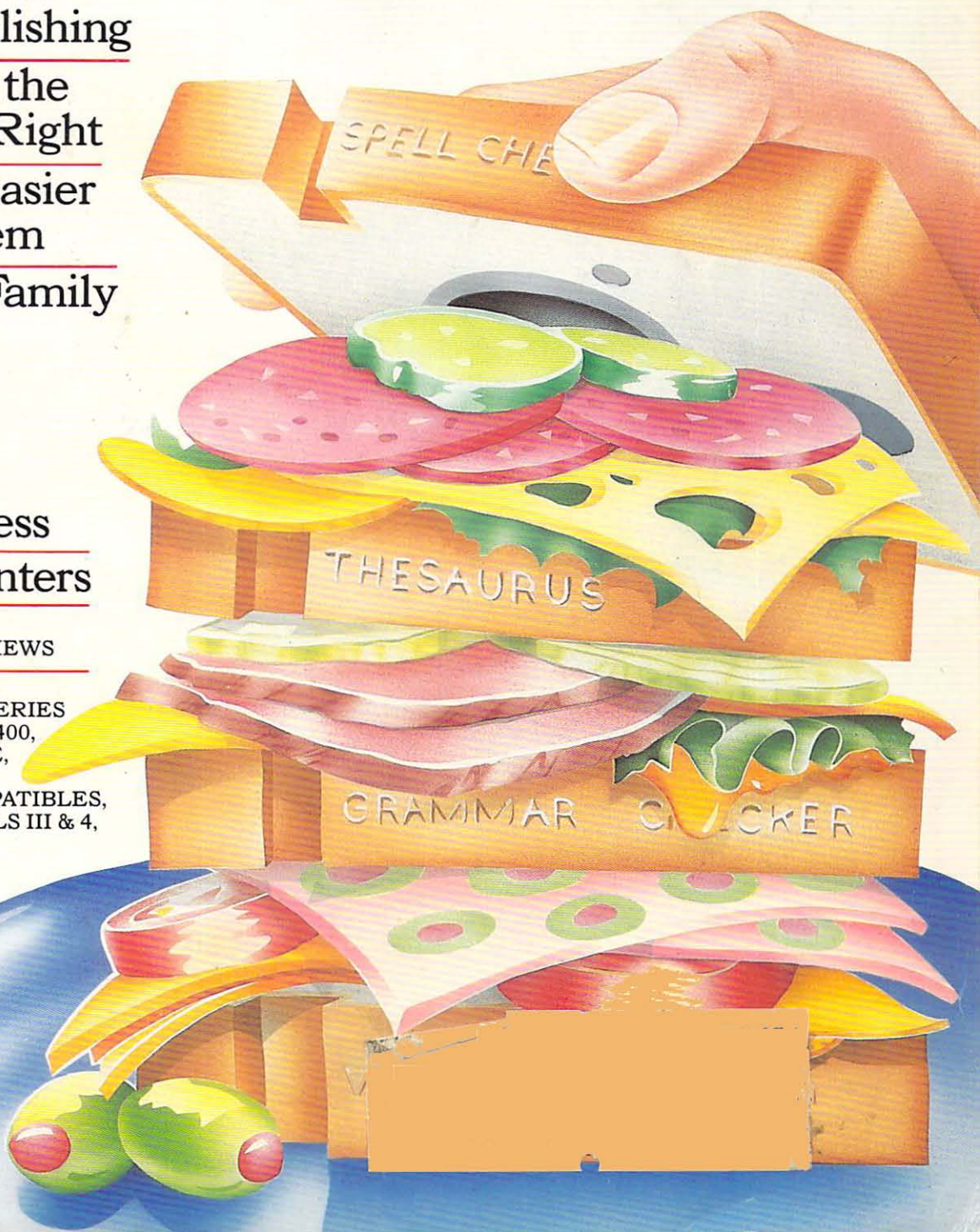
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FOR ADAM, APPLE II SERIES
& MACINTOSH, ATARI 400,
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COMMODORE 64/128 &
VIC 20, IBM PC & COMPATIBLES,
TANDY COCO & MODELS III & 4,
TI-99/4A



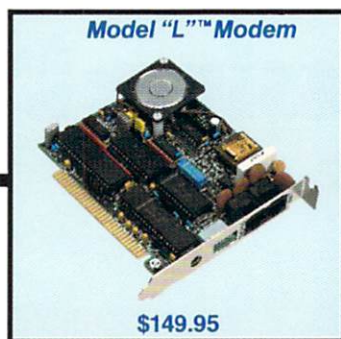
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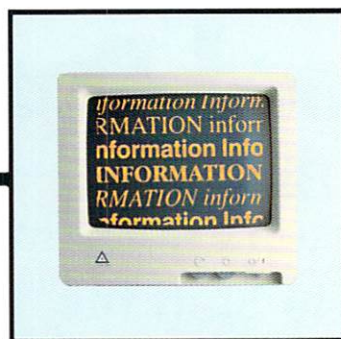
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Turn a better phrase—add spelling checkers, thesauruses, grammar checkers, and outlining programs to your word-processing software.

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SOFTWARE REVIEWS

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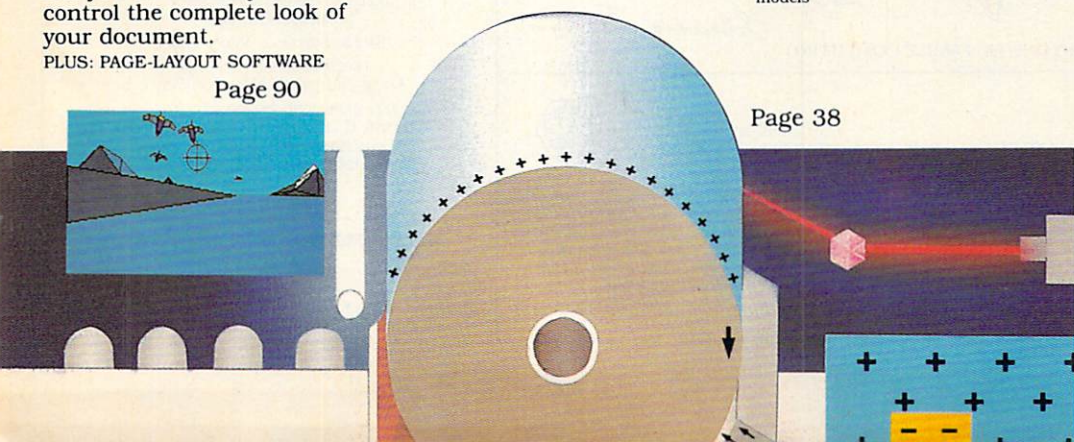
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FAMILY COMPUTING (ISSN 0738-6079) is published monthly by Scholastic Inc., 730 Broadway, New York, NY 10003. Subscriptions: in the U.S. and possessions, 12 issues for \$19.97; outside the U.S. add \$6 (surface mail) or \$25.97 (air-mail). Office of publication: 351 Garver Rd., P.O. Box 2700, Monroe, OH 45050-2700. Second-class postage paid at Monroe, OH 45050-9998 and additional offices. POSTMASTER: Send address changes and notice of undelivered copies to FAMILY COMPUTING, P.O. Box 2511, Boulder, CO 80302. Printed in U.S.A. Copyright © 1986 by Scholastic Inc. All rights reserved.





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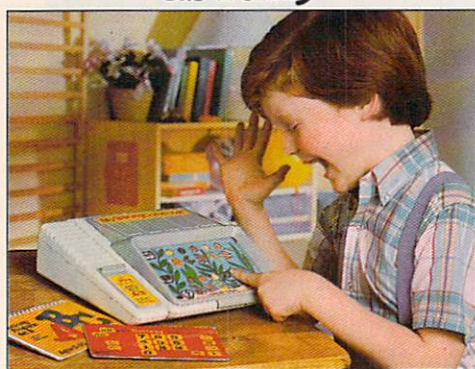
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*Clock sold separately.

CIRCLE READER SERVICE 8

LETTERS

MORE LEVELS TO LODE RUNNER

In your article, "Games That Can Last All Summer" in the July issue, you stated that *Lode Runner* (Broderbund) had 50 levels of play before you can make your own levels. The program actually has 150 levels. I do highly recommend *Lode Runner*, both as a game and a construction set.

JASON HUCK
Vincent, Ohio

EDITOR'S NOTE: *The Apple, Macintosh and IBM PC & compatible versions of Lode Runner have 150 levels; Atari and Commodore versions offer 46 levels. Championship Lode Runner has 50 levels. Good catch!*

SIMPLY USEFUL

I have enjoyed your magazine since January 1986, and as a new "personal computer" user, I am happy to find a publication that's not "over my head." Keep it simple!

HELEN L. HESSLER
Rockford, Missouri

I have been planning on writing you for quite a while now, but when I received my recent issue of *FAMILY COMPUTING*, I decided not to postpone it any more. I would first like to say that I look forward to receiving your magazine every month. All of your articles are very informative and interesting. When I first started my subscription to your magazine, I did not own a computer, although I have bought two for my office. I recently bought an Apple IIc for home use, and your magazine and all of my back issues of it have taken on new meaning. Keep up your fine publication.

MICHAEL ARONSON
Indianapolis, Indiana

FAMILY COMPUTING ON-LINE

I visit your libraries regularly on CompuServe, and I appreciate all the programs you have for Adam computer owners to download.

ALFRED ARMSTRONG
Muncie, Indiana

GAMING ON-LINE

In the article "Telecomputing—Multi Player Games on CompuServe" in your June issue, you failed to include Games Computers Play ([717] 848-2660), which has four multi-player games and graphics. It requires an Atari computer, a disk drive, and Games Computers Play software (free with start-up kit).

JOHN SAPELLO
Minotola, New Jersey

EDITOR'S NOTE: Thanks for bringing this network to our readers' attention. Space limitations restricted our listing of networks with multi-player games, in the June Telecomputing department, to those with over 3,000 subscribers.

HARDWARE QUESTIONS

I have read in your magazine about the Atari 520 and 1040ST, and I am very impressed with their capabilities. I have gone to local computer stores, but cannot find the 520ST or software for it.

Could you please tell me where in my area I could find this great computer. By the way, you have a superb magazine. Keep up the good work. Thanks!

PAT WALSH
Monrovia, Maryland

EDITOR'S NOTE: To locate the nearest Atari dealer in your area, call Atari at (408) 745-2367 during office hours.

In your June Buyer's Guide, you state that "though the Compaq Portable has a built-in monochrome screen, it can run color graphics software (in monochrome), something neither IBM nor other compatible computers can do."

This letter is being written on a Sperry Portable PC that has a nine-inch monochrome screen, and I can do graphics using either Lotus' 1-2-3 or Microsoft Chart without a graphics card. It is almost fully IBM-compatible. I haven't found anything that won't run on it yet.

FRED D. SCOTT
San Antonio, Texas

EDITOR'S NOTE: In order to see any kind of graphics on an IBM PC or compatible computer, you must have either a Hercules compatible monochrome or a color graphics adapter. The Sperry Portable PC comes with a monochrome adapter, which allows you to see color graphics in monochrome. The Kaypro PC will also display color graphics in monochrome.

I enjoy *FAMILY COMPUTING*, but I must quarrel with your listings of printers on page 43 of your May issue. For Panasonic, you list only the 1090 (which I've never even seen in a store) and note that it does not have near-letter-quality capability.

I can't understand why you left out the Panasonic 1091, selected as the top printer in its price range by

Consumer Reports. It does have near-letter-quality mode and is preferable to its competitors, not only because legibility is excellent, but because obvious care has gone into the design of the type.

What's more, some stores where I live are selling it for as little as \$260. This may be heresy, but I prefer a good dot-matrix printer to the daisy-wheel because of its boldness and clarity.

MIKE PALMER
San Rafael, California

In your article on telecommunications last March, you mentioned a piece of software by AT&T, called *SoftCall*. You stated that it would work only with the AT&T 4000 modem. This is not the case; it will work with any modem that supports the "AT" commands (Hayes, 1200 Baud Duck by ADC, and others).

Although I purchased *SoftCall* and the AT&T modem, I tried the software on a few other modems, and yes, it did work on them.

KENNETH KLEM
Deer Park, New York

PROGRAM MODIFICATIONS

I purchased a Commodore C 128 on the basis of your reviews, and it offered the particular features I wanted, plus the available software that would already run on the machine in "64" mode. However, I have found only one program in your listings that will run in both 64 and 128 mode without change: the *All-Purpose Label Maker* in the June issue.

One suggestion I might make is to just add the lines to be modified from 64 mode to 128 mode in the "modifications" section of your program listings. That way, you wouldn't have to list a completely separate program for the 128.

CHARLES H. BARKEMA
Huntington, Indiana

The Atari can display lower-case and inverse text easily, just by pressing CAPS and/or the inverse video key, respectively. The output of your programs would be more attractive if the titles were in inverse video and the words in lowercase with capitalization. I think this would make a nice addition to your programs, and I hope you will consider my suggestions.

EUGENE KOH
Wheatley Heights, New York

CRAZED WORD PROCESSOR

Calling yourself a "crazed woman" in your June editor's note struck a sympathetic chord in me. I, too, am a "crazed woman," although for a different reason. I'm a *WordStar* whiz, and the incredible proliferation of hard-to-use word-processing software (to say nothing of the number of different versions of each program available at any given time) drives me right up the wall.

Success to FAMILY COMPUTING! It has value for multitudes of people who have invested in a computer and can use your many features. The computing public can sure use the guidance and education your magazine provides.

HAZEL LADORE
The Good Word Word-Processing Service
Pittsburg, California

DEFENDER OF THE MAC

As a recent subscriber, I looked forward to my first issue of FAMILY COMPUTING. When the June issue came, I turned immediately to the "Buyer's Guide to Personal Computers."

I am an owner/user of Macintosh machines for personal and business situations, and I have used a wide variety of business, educational, and entertainment software. From my own experience, most users of the Mac are not "heavy spreadsheet users, people who want to experiment with desktop publishing . . . or those with a graphic/visual bent or those who use graphics in their work."

The general comments of people I know after experiencing the Macintosh put heavy emphasis on its ease of use and versatility. Several of them have since become satisfied owners/users, and others plan to do so in the near future. Mr. Sullivan's comments on the Macintosh ("too 'computery' for novices and too 'novicy' for experts") fits this article to a "T."

HARRY F. JONES
Houston, Texas

FAMILY COMPUTING looks forward to letters from all our readers. Please direct your correspondence to: Letters to the Editor, FAMILY COMPUTING, 730 Broadway, New York, NY 10003. Include your name, address, and phone number. We reserve the right to edit letters for length and clarity. Due to the large volume of mail we receive, we are not able to respond personally to every letter.

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CIRCLE READER SERVICE 9

HOME-SCHOOL CONNECTION

WORD PROCESSING FOR BETTER WRITING

How a Simple but Powerful Word-Processing Function Like "FIND" Can Spruce Up Your Children's Prose

BY JACK MCGARVEY

When my 14-year-old daughter Gillian is writing, she pounds away at our computer with deep involvement and total concentration. I'm thrilled that she's using a word-processing program for most of her school assignments.

One evening last year, I peeked over her shoulder to have a look at a piece on opossums that she was writing, using the word-processing section of *AppleWorks*.

"How's it going?" I asked.

"Good," Gillian replied.

"Mind if I read what you've written?"

"No, go right ahead," she murmured, still engrossed.

I started from the top of her file. Right away I spotted a spelling error. My impulse was to point it out, but I resisted. (Note: See accompanying box, "Spelling Tip.") I continued down a few lines. My eyes landed on two sentences that read, "The opossum was walking slowly across the end of the yard. Six babies were seen hanging from her tail."

FIND THE WAY TO CRISPER WRITING

Gillian, like many other writers, relies too heavily on the helping verbs: *is*, *are*, *was*, and *were*. From my experience as a teacher of English, I've learned that using too many helping verbs can lead to flabby sentences and unfocused writing.

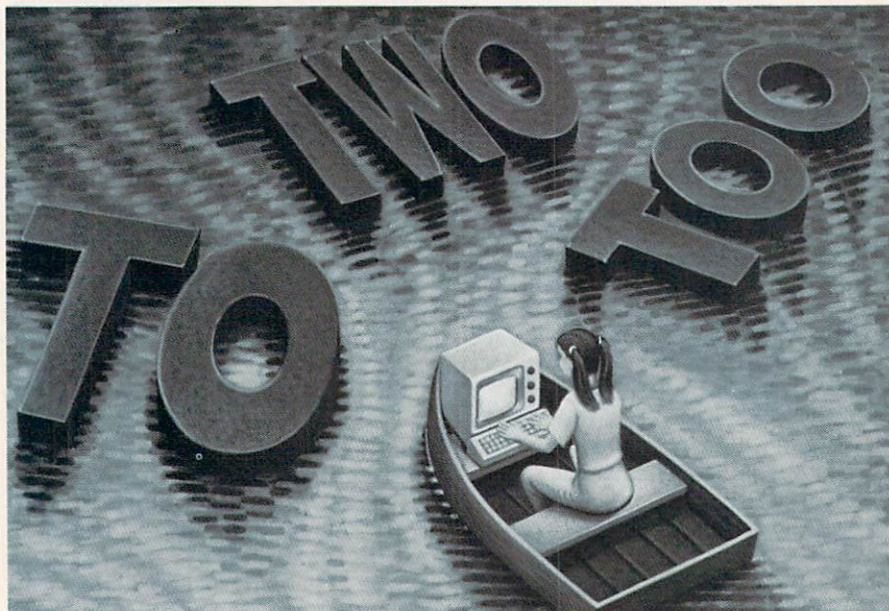
Gillian looked up at me. "Well, what do you think?"

"It's a good story with excellent description," I replied.

"But?" she teased. "You always have a 'but.'"

She knows that when it comes to critiquing her writing, I usually do have a "but." She knows what I think: Writing is rewriting to find better words, more detail, and stronger verbs.

"Well, since you asked, can you eliminate the two uses of *was* in



those two sentences about the opossum and her babies?" I asked.

Gillian began scrolling down the screen from the top of the file to search for the two sentences.

"Wait," I suggested. "There's a better way."

I leaned over and pressed two keys to call up the FIND function on *AppleWorks*. (Some word-processing programs call it SEARCH.) The software responded with the prompt, FIND WHAT? and I typed in *was*. I pressed another key and the computer's screen whirled. In a twinkle, *AppleWorks* had highlighted the first use of *was*. It stood out just begging for a closer look.

"Neat!" she said. "Now I can really see it."

"Think of how an opossum walks. See whether you can find a way to let your reader see it walk," I suggested.

"Waddles, ambles, swaggers," she said.

We talked briefly about the meaning of each of these verbs. I walked over to the bookcase and took out a dictionary of synonyms. "You might find this helpful," I said.

I walked away and a few minutes later, she called me to come back.

"What do you think of this change?" she asked.

"The opossum waddled across the

end of the yard. Six bobbing babies dangled from her tail."

"Terrific!" I said. "Now the reader can see the opossum and the babies. You show the opossum rather than tell about it."

"I like it a lot better, too," she said.

I watched as she pressed the two-key FIND command again. She studied the screen intently as FIND located the next occurrence of *was*. She rearranged that sentence a bit, deleted a couple of words, performed another FIND, and smiled at me.

I smiled, too, as I thought of how difficult it is to point out problematic sentences in messy paper-and-pencil drafts. FIND, which could be the most under-utilized function of word processing, made it a breeze.

WAYS YOU CAN USE FIND

During my years of teaching eighth grade at the Bedford Middle School in Westport, Connecticut, I have taught my students many ways to use the FIND function. FIND is so effective that my students independently revise and edit their own work. They rarely call upon me to help. And they hand in more concise, better-written papers.

Whenever one of my students or I come up with new ways to use FIND, we create reminder signs using

JACK MCGARVEY frequently writes about computers and parenting. His articles have appeared in *The New York Times*, *McCall's*, *Parents*, *Learning*, and *PC Magazine*.

The Print Shop (Broderbund) and post them on the wall above the computers. And now that Gillian is becoming a FIND fanatic, we're creating the same attractive signs to liven up our computer room at home. The walls of the room that houses our Apple IIe and IBM PC are covered with reminder signs that list helpful suggestions for using FIND.

You can do the same for your children or yourself. Every time you or your kids discover a new way to use the FIND function, make a sign using a graphics software package, paints and posterboard, needlepoint, or crayons and paper. The signs will add personality to an otherwise dull computer room or corner and remind your children of the possible uses of FIND.

Gillian uses the following FIND reminders whenever she is word processing:

■ Use FIND to see if you have used *is*, *was*, *are*, and *were* too often. When FIND locates one of these words, see whether you can rewrite the sentence without the word. Using a good strong verb in its place will give the sentence sharper detail.

■ Use FIND to see whether you have used any of the following words: *something*, *anything*, *nice*, *well*, *wonderful*, *a lot*, and *pretty*. If you have used any of these words, determine whether a more descriptive

SPELLING TIP

As I mentioned, when I spotted a spelling error in Gillian's writing, I resisted an impulse to correct it. I never check for misspelled words in her writing until after it's been through a spelling checker.

If your children ask you to read what they have written, usually they are seeking approval and help with meaning. They're likely to get annoyed with you for picking out "petty mistakes."

For that reason, follow this rule: *Always deal with meaning before pointing out errors like misspellings.*

And, if possible, encourage your kids to use a spelling checker. Gillian uses *Sensible Speller* (Sensible Software), which is compatible with *AppleWorks*.

Seeing the correct spelling is the best way to learn how to spell a word. From Gillian's experience (as well as my own!), I've observed that she no longer misspells words like *separate* and *desperate* on first drafts. Spelling checkers teach spelling. (Note: Turn to the "Guide to Writing with Computers: Part 2" in this issue for a list of the programs that check spelling and grammar, find synonyms, and more.)

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HOME-SCHOOL

word is appropriate. For example, delete *a lot* and replace it with *dozens*.

■ Use **FIND** to check for uses of *to*, *too*, and *two*. These are among the most frequently confused words. Perform a **FIND** for all three words, and make sure you have used the

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SIGN OF WEAKNESS
OR DEFEAT THAT
YOUR MANUSCRIPT
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—E.B. WHITE

correct spelling of the word. Another confusing trio of words you should check for is *there*, *they're*, and *their*.

■ Use **FIND** to double-check that these words are used correctly: *affect-effect*, *brake-break*, *capital-capitol*, *coarse-course*, *desert-dessert*, *farther-further*, *hear-here*, *its-it's*, *lead-led*, *passed-past*, *principal-principle*, *quiet-quite*, *shone-shown*, *stationary-stationery*, *than-then*. Of course, if you know you haven't used some of these words, don't bother looking for them. If you have, use **FIND** to check both spellings.

■ Use **FIND** to hunt down apostrophes. Examine each apostrophe and make sure that it is used properly. You don't want to overuse apostrophes, nor do you want to use an 's to make a singular noun plural.

■ Use **FIND** to make sure all of your commas and periods fall inside of quotation marks. Perform a **FIND** to check for these two errors: *"* and *"*. If you find any, correct them.

■ Use **FIND** to see that you have remembered to close all of your quotes. Perform a **FIND** for this symbol: *"*. Be sure each has a partner.

■ Use **FIND** to point out misspelled words. If you've misspelled a word once in your paper, you could have misspelled it again. Using **FIND**, look for other occurrences of a word you've misspelled.

At school and at home, I've also posted this reminder from the late essayist E.B. White, author of *Charlotte's Web* and co-author of *Elements of Style*.

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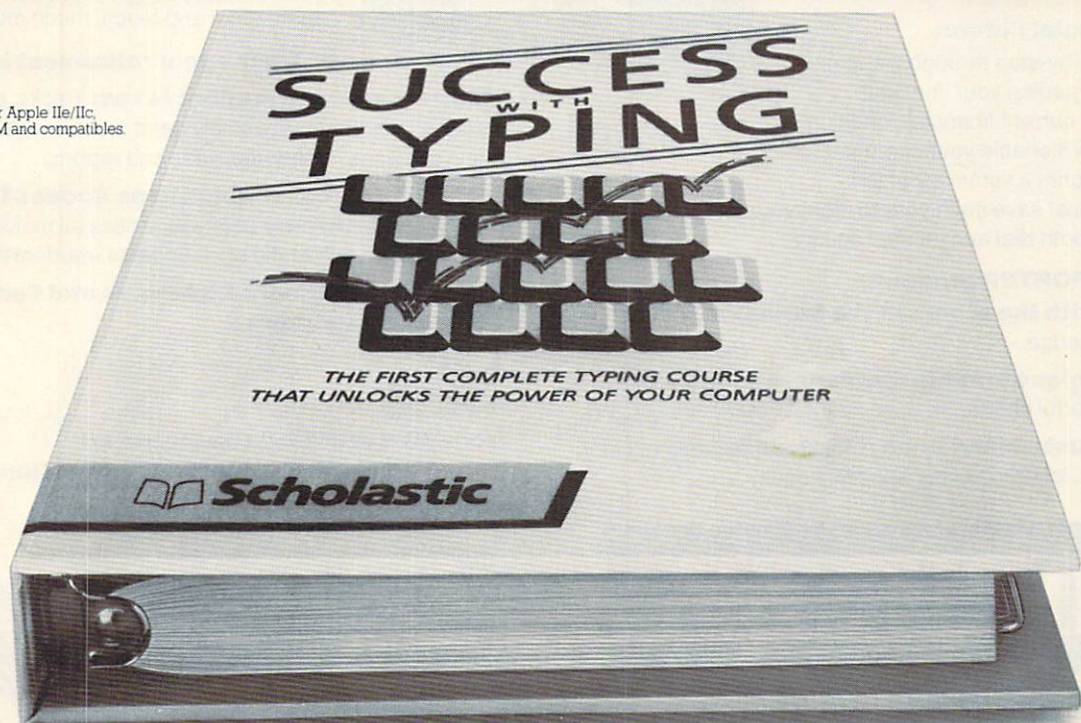
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PERSONAL FINANCE

TAKE THE MONEY AND LEARN

Financial Simulation Software Teaches as It Entertains

BY BARRY BRENESAL

Educators have long known that our ability to learn is dramatically increased when our imaginations are engaged. So it's perfectly natural that simulation software—designed to teach by putting you in real-life situations—often takes the form of a game.

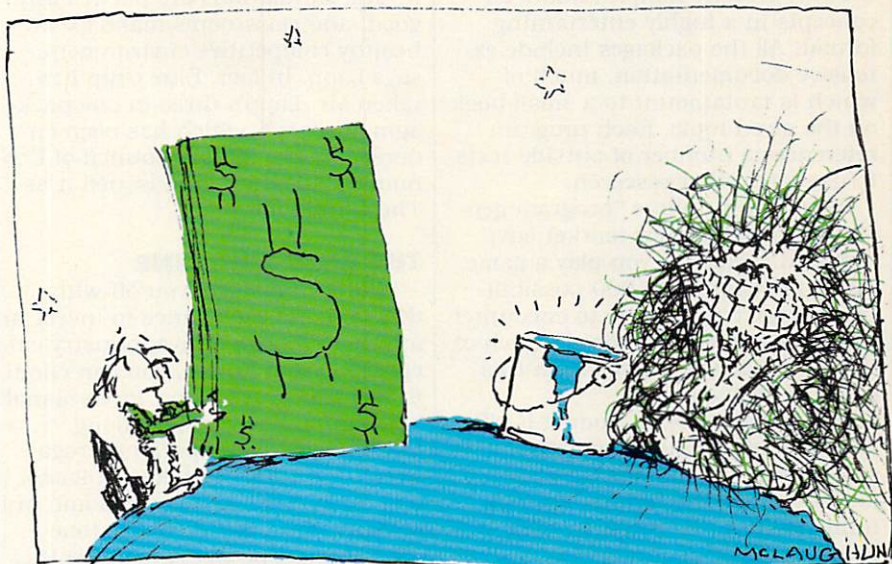
Probably the most popular simulation program for personal computers is Microsoft's *Flight Simulator*, which puts you at the controls of an airplane and asks you to take off and land. But one of the earliest and most talked about simulations was *Lemonade* (MECC), an educational program (now in the public domain) that teaches children basic principles about money and business. On hot days you sell a lot of lemonade, and on rainy days you don't. So it pays to produce the right amount for a given day's weather conditions.

Now, there are several more superb software packages that provide a basic education in financial management and corporate planning. Computer-designed models allow students, trainees, and ordinary people with a spark of curiosity to learn many of the principles behind the stock market, commodities exchanges, real-estate investments, banking, and corporate helmsmanship. Whether you call these programs games or simulations, they make learning about the business of business fun. They range from the simple to the complex—with some in the middle that the whole family can enjoy.

SIMPLE

"*Run For the Money* is the best thing on computers," says one source of mine, an eight-year-old

BARRY BRENESAL is general manager of KPBX, a public radio station in Spokane, Washington. He has played with financial simulations for several years and invests in the stock market.



who wishes to remain anonymous. *Run For the Money* (Scarborough) features a pair of "Bizlings" (i.e., you and your playing partner) who crash-land on Simian during a dangerous "zinger" storm. To get aloft again, each of you must buy special shield paint from the Paint Van. And to gain enough cash, you buy raw materials (rufs) of varying levels of quality from any of three distributors. In turn, you produce "synanas" for sale to the Simians.

Above all, the game's playability depends upon the interweaving of sound economic theory with pure whimsicality. "I always check the Simian Vine," says my informant, referring to the game's internally generated newspaper.

While players of all ages might enjoy *Run For the Money*, adults might find themselves translating a made-up currency and environment into real terms, since they are more likely to think "dollars and cents" to begin with. Youngsters, of course, will have no trouble accepting a made-up world.

COMPLEX

Bank President (Lewis Lee Corp.), with more than 70 colored graphs, allows up to 10 banks to compete against one another. It's definitely a game for serious students of the banking system. A friend of mine, an engineering professor, once put a

lock on his computer so his children wouldn't play *Asteroids*. He's not a fun-loving guy. He plays *Bank President*.

Have you ever wanted to set policy regarding real estate, commercial, or consumer loans; borrow federal funds; or sell and buy U.S. Government securities with different maturation dates? Playing *Bank President* gives you the opportunity. In the process, it may indicate your latent banking skills or demonstrate why you can't balance a checkbook.

Another new business simulation for the serious-minded is *Business Simulator* (Reality Development Corp.), which has the endorsement of *Venture* magazine. You are the chief executive officer of your own company and have \$500,000 in venture capital. You must compete against four established companies—Apple Computer, Hewlett-Packard, Texas Instruments, and Tandy. Though they're all computer companies, they are chosen to illustrate another point—that companies succeed in business by following different strategies. To reach the fifth and highest level, you have to devise your own success strategy.

BROAD-BASED APPEAL

To my way of thinking, the most exciting development in business simulation software has been the emergence of Blue Chip Software.

PERSONAL FINANCE

Blue Chip, recently bought by Encyclopaedia Britannica, specializes in financial simulations. The company's five programs (*Millionaire*, *Baron*, *Tycoon*, *Squire*, and *American Dream*) present complex financial concepts in a highly entertaining format. All the packages include extensive documentation, much of which is tantamount to a small book on the given topic. Each program references a number of outside texts to use for further research.

Blue Chip's unique "program generator" creates a new market environment each time you play a game. There are about 300,000 possibilities, so you're not likely to encounter the same one twice. Indeed, much of the game's flavor derives from this sense of realism.

The gross national product (GNP), labor strikes, foreign competition, and seasonal variations, to name a few of the varying factors, strongly influence your decisions in each game.

While much simulation software is aimed at kids or professionals, Blue Chip's simulations appeal to a broad constituency. How broad? Both Gregory Wick and Charles Faurot like *Millionaire*, the stock market simulation.

Gregory, who is 16 and lives in Trumbull, Connecticut, was given a copy of *Millionaire* by his mother for Christmas. "It's a challenge and teaches you how certain things happen in real life," says Gregory. "You can try out different formulas to increase the value of your portfolio and you don't have to lose a fortune as a result. Each game is different, too."

Charles Faurot, on the other hand, is assistant vice president of the American Stock Exchange. Faurot explains, "We at the exchange want to educate individuals on how the stock market works so that they will become better investors. We feel *Millionaire* is an excellent introduction. It's relatively realistic and very addictive."

In addition, Merrill Lynch uses *Millionaire*, *Tycoon*, and *Baron* to train new stock brokers.

In the middle, between the student and Wall Street professional level, is Charles Lapp, associate superintendent of School District 47 in Crystal Lake, Illinois. "We took Blue Chip's *Millionaire*, *Baron* (real estate), and *Tycoon* (commodities), and packaged a program for our students. It's been quite effective in

teaching economics and financial systems. We've used the package in grades 4 through 8 for three years now."

How does it work? "The kids love it. The simulations are particularly good, and classrooms make for a healthy competitive environment," says Lapp. In fact, Blue Chip has taken Mr. Lapp's three-in-one packaging concept, which has been endorsed by the Illinois Council of Economic Education, and issued it as *The Challenge*.

THE BLUE CHIP LINE

Millionaire starts you off with \$10,000 and the chance to invest in any of 15 stocks in five industry categories. From Novice, you can climb to Investor, Speculator, Professional, and, ultimately, Broker. Along the way, you gain special prerogatives—the ability to take out loans, buy on margin, and use call and put options. You have 77 weeks (one turn equals one week) to study the financial headlines, corporate histories, and price trends—in order to

JIM ZUBER: MAKING IT IN SOFTWARE

Jim Zuber, designer of all Blue Chip's simulations, learned his stuff in the real world. While a manager at a half-billion dollar company, he did a freelance consulting job for a millionaire. He used his computer background to design a \$30,000 musical staircase for his client's mansion. Zuber made \$5,000 on the job and invested it in the stock market. After a year of wheeling and dealing, he had \$2,500 left. "I think that experience is pretty typical for a novice investor," he says.

Zuber combined his computer background with his stock market experience and designed the game *Millionaire*. It's sold over 100,000 copies, and it has been featured in every major financial magazine, as well as *Time* and *Newsweek*. Later, Zuber applied his house-buying experience to develop *Baron*, the real estate simulator. "I took a two-day course on real estate before I bought my first house. You can learn what I learned by playing *Baron* for two hours," says Zuber. Since then, Zuber's 10 years in management proved handy in designing *American Dream*.

Zuber is now executive director of research and development at Blue Chip. "That means I make games for a living," he says. Zuber no longer plays the stock market. "Now I'm trying to make millions in the software market."

His advice for players of his games? "Education gives you courage."

—NICK SULLIVAN

make one million dollars.

Tycoon is somewhat similar, except that it's a simulation of the commodities market. Your increase in status is reflected by lower margin fees, additional items for trade, and the ability to take "short" positions.

Baron, the real estate simulation, gives you \$35,000 to start with and a wide range of properties to choose from. Because of the wide latitude in decision making, it's the toughest game to win "big." If you've never bought or sold a house before, it will give you a good idea of the whole process.

Squire reflects America's growing concern with the enjoyment of money rather than its simple accrual. Simply put, you're given \$700,500 and your goal is to quit in 20 years with a million dollars. Because you can make money any way you please (as in real life), *Squire* incorporates some of the features found in *Millionaire*, *Baron*, and *Tycoon*, such as blue chip and growth stocks, two grades of bonds, and IRAs.

You can play *Squire* in its artificial environment or customize it to reflect your own situation (REALITY mode). Set up a series of personal parameters, such as the kids' education, a new house, a different job, and a new tax bracket.

American Dream, Blue Chip's latest release, signals a new direction. The program is not a financial simulation, but is designed for managers and supervisors; it's more like *Business Simulator* and *Bank President*.

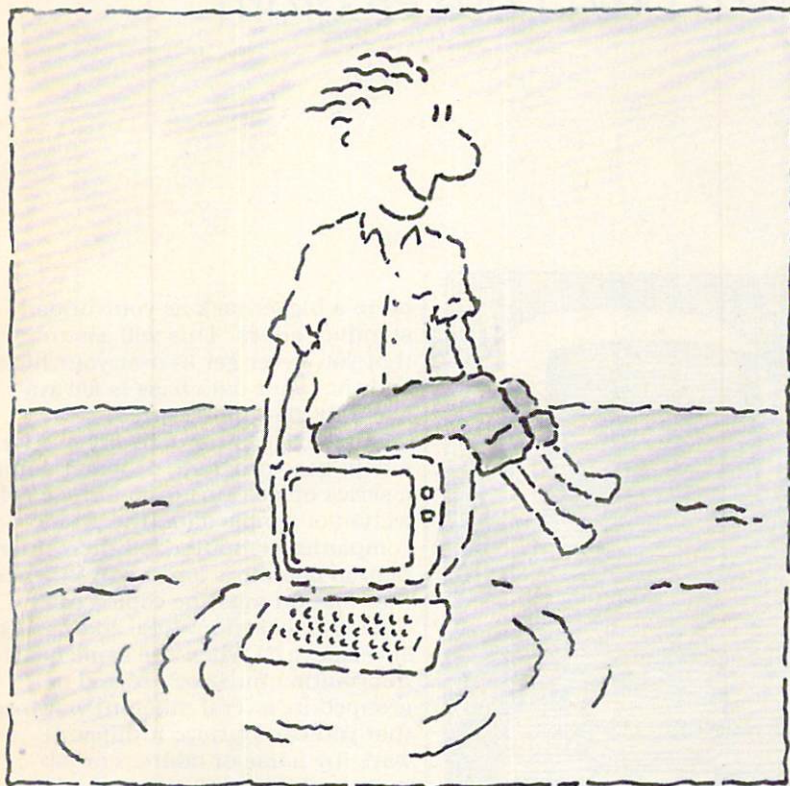
NO GUARANTEE

There's no guarantee that you'll get up from a session with any one of these financial simulations and immediately make a fortune in soybeans or United Humbug Inc. I can guarantee, however, that you will learn a good deal about the economic world around you and have a great time in the process. As Gregory Wick puts it: "You can pick your stocks and lose a fortune learning from your mistakes. Then you can turn off the computer." And go on living, I might add, without declaring bankruptcy. ☐

MANUFACTURERS

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CIRCLE READER SERVICE 18

HOME OFFICE

TRACK PEOPLE AND EXPENSES

Two Simple Ways to Use a Data-base Program

BY CHARLES H. GAJEWAY

One of the most useful personal computer tools is information management software, better known as data-base software. Yet, such programs usually come in a distant third in surveys of program usage, for both home and business applications.

In my experience, this is because these programs can be more difficult to learn than word processors or spreadsheets. Many people start with too complex a task, and that leads to frustration and failure. Let's take a straightforward look at what a data base can do and at the best way to get started—and get results.

When you use a data-base program, you are collecting, storing, and arranging information so that it can be used easily and effectively. Just as paper filing systems range from simple setups such as addresses and telephone numbers on a Rolodex to extremely complicated systems such as the Encyclopaedia Britannica or the Library of Congress, data-base software ranges in complexity and power. (See "Get Organized For Good With Data-base Software" in the March 1986 issue.)

Here we describe uses for the most basic type of data-base program—a simple filer or forms manager. Examples of such programs include PFS:File, Microsoft File, and AppleWorks. All are relatively simple filing programs that can be used for most tasks.

GETTING STARTED

When learning to use a word processing program, you can pretty much start typing and learn as you go. But if you start to use a data base for too complex a task without a clear understanding of the program's features, you'll get pretty frustrated. First, read the manual



thoroughly, several times if necessary. Automating the retrieval and arrangement of information involves some complex concepts that need to be thoroughly understood. When I began using one of my favorite data-base programs, I had to read certain sections repeatedly before some of the program's logic became clear; then it was simple to design my own application.

Start small and experiment with limited amounts of data until you are comfortable with the basic operation of your program. Then move

on to a bigger task as your understanding grows. This will assure that you never get in over your head and that your data base is always useful, if not fully utilized.

Three basic situations cry out for a data-base program: 1) When doing a series of look-ups from a huge collection of simple data (the phone companies computerized their information operators long ago); 2) When information must be copied each time it is looked up (like addressing envelopes); 3) When the same basic information must be ordered or grouped in several different ways, so that you can retrieve it different ways (by name or address or job type, for instance).

All of these tasks need to be done frequently in everyday life—whether at home, at the office, or for your neighborhood groups. Here are two examples of a data base at work.

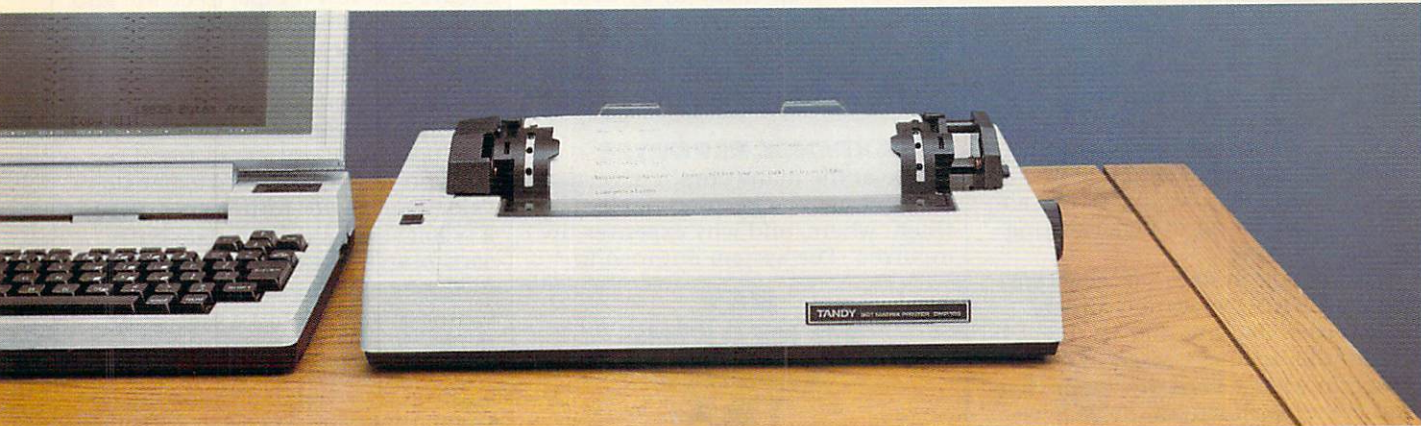
A PEOPLE TRACKER

One of the most important things to keep track of is people and their relationships to you. If you're a professional, it's helpful to know who your best—and worst—clients are. If you are a member of an organization that does mailings or organizes lots of meetings, it's very helpful to have your computer arrange the membership into appropriate groups so that information can get to all the right people on time.

Figure 1 tracks a business's clients by total sales, last order date, and last order size. To start and maintain the system, you simply enter each client's name, address, phone, and order data. As new orders come in, the old total in Field 27 (TOTAL ORDERS) is entered into Field 24 (PREVIOUS ORDERS). Then the new order date and amount are put into Field 25 (LAST ORDER) and Field 26 (AMOUNT), respectively. Formula C1 (adding Field 24 and Field 26) then calculates the new order total, displayed in Field 27. →

Contributing editor CHARLES H. GAJEWAY wrote "How to Set Up a Home Office" in the July 1986 issue.

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CIRCLE READER SERVICE 52

People's names are separated into six components (first name, second name, last name, suffix, such as "Jr.", nickname and title) to facilitate creating form letters with a word processor. You could call Mr. James A. Johnston III by his full name or James, etc. and still retrieve it from the data base. The address is broken up to make sorting by location easy.

This simple system can generate lists of clients by location, order date, order amount, and total amount of business. Used in conjunction with a word processor that can create form letters, these lists can help build orders from mediocre customers, thank good customers warmly, and say good-bye to bad customers.

Many data-base programs allow the use of empty fields to provide room for growth, and this is a feature you should make good use of in any system you create. The "People Tracker" is no exception; once you have maximized your use of the simple system, it could grow into an order entry/tracking system, handling shipping labels, billing, and ac-

counts receivable, simply by using some of the empty expansion fields to hold information on shipping dates, billing data, and payment statistics.

THE EXPENSE REPORTER

One of the many curses of business travelers is keeping track of when, where, and why expenses are incurred. The system outlined in

KEY TO READING FIGURES 1 & 2

Figures 1 & 2 were generated by a data-base program. It doesn't matter which program I used, since most programs require similar types of information. But you need to know what that information represents.

KEYS are the two or three fields you select to ensure that each record is unique. For instance, in Figure 1 the keys are LAST, 1ST, and 2ND. You could have two or more Sullivans in the data base, but it's unlikely that you'd have more than one John L. Sullivan.

FLD and NAME are self-explanatory. (Note that not all programs will accept unnamed fields.) TYPE refers to the way the field operates and what kind of data the field will accept, as follows:

V is a variable length field that can hold letters, numbers, or a mixture of characters up to the maximum specified length of the field.

F is a fixed length field. A certain number of characters of a specified type must be entered. Zip codes, phone numbers, and dates are typically entered via fixed length fields.

E represents expansion fields, currently empty. These fields can be specified as active at a later date, without disrupting the structure of the systems. Since most programs present some degree of inconvenience in restructuring existing data files to accommodate new fields, it is wise to allow for future expansion when initially creating your data structure.

If a field is the result of a calculation, REFR indicates where it comes from (see Figure 1).

LEN is simply the maximum number of characters that the field will hold. Many programs place limits on the length of fields and records, so the user must compromise between completeness and data storage.

Figure 2 is very simple to create and update, yet it can organize your travel expenses beautifully and save a lot of time and headaches. This system is designed to hold the minimum amount of information necessary to produce a good variety of travel reports. It includes several expansion fields to allow for future growth. As a result, time spent on data entry, sort, search, and disk usage will be moderate. This is an important consideration in a system intended to save time.

For most people, the tedious part of travel reporting is the sorting and summarizing of expenses. With this system, trip receipts can be pulled from a shoebox or envelope and entered in random order. Since the computer can use this information to print reports arranged by day and category, drudgery is reduced to simply making sure that you have all your receipts and that they have been correctly entered.

In addition, this information can be summarized by time period, client, office, and sales representative. All these categories can be very helpful to a manager trying to establish patterns or make decisions.

Figure 1: "People Tracker"

KEYS: LAST + 1ST + 2ND
COMBINED KEY LENGTH = 56
27 SCREEN FIELDS

FLD	NAME	TYPE	REFR	LEN
1	1ST	V		17
2	2ND	V		13
3	LAST	V		26
4	SUFF	V		5
5	NICK	V		15
6	TITLE	V		31
7	CO.	V		34
8	STREET	V		34
9	CITY	V		16
10	STATE	V		2
11	ZIP	F		5
12	PHONE	F		10
13		F		1
14		E		1
15		E		1
16		E		1
17		E		1
18	COMMENT	V		71
19		V		71
20		E		1
21		E		1
22		E		1
23		E		1
24	PREVIOUS ORDERS	V		11
25	LAST ORDER: DATE	F		6
26	AMOUNT	V		10
27	TOTAL ORDERS	O	C1	10

C1 = FIELD 24 + FIELD 26

Figure 2: "The Expense Reporter"

KEYS: AMOUNT + DATE + TYPE
COMBINED KEY LENGTH = 29
10 SCREEN FIELDS

FLD	NAME	TYPE	REFR	LEN
1	AMOUNT	V		9
2	DATE	F		6
3	TYPE	V		13
4	CLIENT	V		32
5	OFFICE	V		20
6	REP	V		32
7		E		1
8		E		1
9		E		1
10		E		1

THE REWARDS

These examples point out how useful computerized data bases can be, for both personal and professional uses. Automating record keeping and retrieval is probably one of the most valuable things that computers do. Because the tasks and software are a bit more complex than using a spreadsheet or a word processor, the rewards of a well-designed data-base system are greater. If you start small and build up a step at a time, in a very short while you'll wonder how you ever got along without your data base. **RE**

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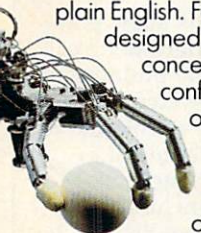
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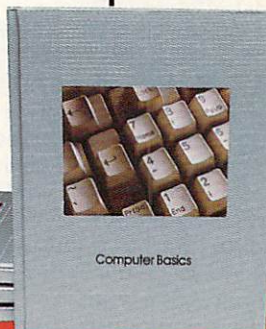
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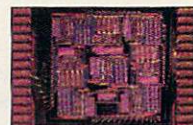
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ENTERTAINMENT

PLAY TO LEARN: Educational Uses of Entertainment Software; or, What to Tell Your Family and Friends When They Say You're Wasting Time Playing Games

BY JAMES DELSON

Whether you realize it or not, you are constantly being made to think when you play with entertainment software. The continuing education you receive while passing the hours in front of your monitor may seem like leisure time when you're mapping your way through *Wizardry*, solving a puzzle in *The Crimson Crown*, or deciding which club to use in *Championship Golf*. Yet each of these fun activities could be considered homework under different circumstances.

Drawing and reading maps for a geography or history course is not as escapist for most folks as divining their place in a vast underground cavern populated by monsters. But the same basic theories apply to both. Figuring out the answer to a riddle, such as those encountered in most text-only and text/graphic adventures, utilizes the same deductive reasoning that would be used in solving everything from SAT exams to crossword puzzles. And playing the money markets with a financial simulation game may become more than plain fun if you can transfer those same skills to the real financial markets.

GOLF AS A CLASSROOM EXERCISE?!

This seems to be the year of golf, with at least three excellent games so far in 1986: *MacGolf*, *Championship Golf*, and *Mean 18*. (See review of *MacGolf* in the *Software Reviews* section.) Computers and golf are very well-matched, since so much of



the game is based on mathematical equations that get answered by questions like these: At what angle do you place your feet? With what angled club do you hit the ball? How much power do you use to hit the ball and at what angle of loft? Will the wind affect your shot, making you add a compensatory hook or slice to keep the ball on target?

Each shot involves a series of these interlocking decisions. If you swing a club that has a shallow angle of loft, you'll get greater length, but less height (which might mean you'll hit it over that water hazard, but you might not get it past the trees). Should you hit every shot with all your strength, or just tap it? Each equation could be worked out on paper in advance, so that a skilled mathematician could achieve success with a computer golf game even if he or she had never played it before. Calling this activity "applied algebra" or "tactical trigonometry" might drive away prospective players, but golf programs could be used in classroom situations as legitimate teaching tools.

LEARN ABOUT HIGH FINANCE (WITHOUT INVESTING A CENT)

Money problems never seem to go away, but by playing financial strategy games, you can learn to get a better handle on money. With such programs as *Wizard of Wall Street*, *Squire*, and *BottomLine Capitalist*, you manage portfolios of stocks and bonds, money market funds, real estate, commodities, and other capital investments.

While it's not as time-consuming

to create and run a successful business simulation as it is in the real world, you're offered the same challenges. You must learn how to balance spending with income (to create a good cash flow), how to keep track of your holdings (so you can buy or sell at the best time), and how to use loans to your best advantage without being overwhelmed by debts.

Financial games offer authentic and invaluable experiences in the hazards and rewards of dealing with money, experiences which can be directly applied to daily life by adults or used in schoolwork by children. (For more information on financial simulation games, read the *Personal Finance* department on page 11.)

THE HISTORY OF WHAT HAPPENED

Historical simulations allow players to re-create or change such real periods of history as the building of the American railway system in *Rails West!*, or the era of colonial expansion in *Colonial Conquest*. These simulations of history also cover specific events, including battles of the American Civil War such as *Battle of Chickamauga*.

Some simulation games do not replicate history, but take events which could have happened (yet didn't) and then let you play out one of the potential outcomes. There are two examples here: With *Incunabula*, you explore how civilizations of all kinds grow. With *The Seven Cities of Gold*, you can learn how the Americas were taken over by the Europeans in the 1600s.

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JAMES DELSON is FAMILY COMPUTING's entertainment software reviewer.

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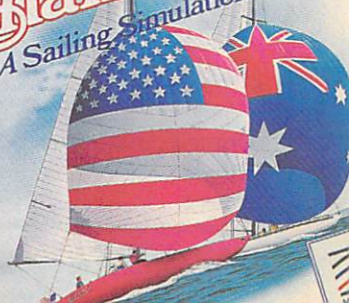


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SOFTWARE INFORMATION

Alter Ego. (two versions: male and female). Activision, (415) 960-0410. Apple, C 64/128, IBM PC/PCjr.* Macintosh. \$50-\$60.

Battle of Chickamauga. Game Designer's Workshop, (309) 452-3632. Atari, C 64/128. Planned for Apple. \$35.

BottomLine Capitalist. Venture Software, (818) 986-4110. IBM PC/PCjr.* \$80.

Championship Golf. Gamestar, a division of Activision, (415) 960-0410. IBM PC/PCjr.* \$50.

Colonial Conquest. Strategic Simulations, (415) 964-1353. 64K Apple, Atari, C 64/128. \$40.

The Crimson Crown. Polarware Software, (312) 232-1984. Amiga, Apple IIe/IIc, Atari 520ST, C 64/128, IBM PC/PCjr*, Macintosh. \$18-\$30.

Gato. Spectrum HoBoByte, (303) 443-0191. 128K Apple IIe/IIc, C 64/128, IBM PC/PCjr.* Macintosh. \$30-\$50.

Incunabula. Avalon Hill, (301) 254-5300. IBM PC/PCjr.* \$30.

Jet. SubLOGIC, (217) 359-8482. C 64/128, IBM PC/PCjr.* \$40-\$50.

MacGolf. Practical Computer Applications, Inc., (612) 427-4789. 512K Macintosh. \$60.

Mean 18. Accolade, (408) 446-5757. Amiga, Atari 520ST, IBM PC/PCjr.* \$45-\$50.

Rails West! Strategic Simulations, (415) 964-1353. Apple, 40K Atari, C 64/128. \$40.

The Seven Cities of Gold. Electronic Arts, (415) 571-7171. 64K Apple, Amiga, Atari, C 64/128, IBM PC/PCjr.* \$33-\$40.

Silent Service. MicroProse, (301) 667-1151. Atari, Apple, Atari 520ST, C 64/128, IBM PC/PCjr.* \$35-\$40.

Squire. Blue Chip Software, (818) 346-0730. Apple, C 64/128, IBM PC/PCjr.* 512K Macintosh. \$30-\$60.

Stunt Flyer. Sierra On-Line, (209) 683-6858. C 64/128. \$25.

Wilderness. Electric Transit, (805) 373-1960. Apple, 256K IBM PC.* \$50.

Wizard of Wall Street. Synapse, a division of Broderbund Software, (415) 479-1170. IBM PC/PCjr.* \$45.

Wizardry. Sir-Tech Software, (315) 393-6633. Apple, IBM PC/PCjr.* Macintosh. \$50-\$60.

*Titles listed for the IBM PC/PCjr will also run on many IBM PC compatibles; owing to the proliferation of compatibles, check with the publisher of the program or your dealer for compatibility.

Unless otherwise noted, minimum memory requirements are 48K for Apple II series, 48K for Atari 800/XL/XE series, 128K for IBM PC/PCjr or compatibles, and 128K for Macintosh.

CIRCLE READER SERVICE 2

CIRCLE READER SERVICE 33

age. What better way is there to learn about history than to live it?

SIMULATION SOFTWARE

People love the way computer simulations can make you feel as if you're experiencing something that you otherwise might not have. For instance, you can pretend you're flying an airplane in *Jet* or *Stunt Flyer*. Or you can command a submarine in *Gato* or *Silent Service*. Would you like to go on a survival adventure in some remote terrain? Then play *Wilderness*. You can even create a person from scratch and live his or her life with the male and female versions of *Alter Ego*.

In the usually fantastic world of role-playing adventures, *Alter Ego* is the first simulation of its kind. It lets you dream up an imaginary person, or simulate yourself or someone you know, by answering questions about how this individual would behave under certain circumstances. Then you get to live out your alter ego's life, from birth on. Playing *Alter Ego* helps you learn about yourself, since it indicates how, if you had made different choices, you might have turned out differently. Also, by pretending you're a 16-year-old all over again, you're often forced to think about your own past, and you can learn how it might have been better to react in a variety of circumstances (such as school, dating, friendship, work, marriage, and finances).

On a more physical level, *Jet* (and most other airplane simulators) teaches you balance and hand-eye coordination while giving you a sense of how difficult flying an airplane actually is. And even though most of us will never be on an airplane that crashes in the mountains, *Wilderness* has its own practical side. Playing it teaches you to think ahead and plan for the future, shows you how to take care of yourself under adverse circumstances, and provides such basic outdoor skills as topographical map reading.

Since, by definition, simulations apply to real-life experiences, each simulator offers you the opportunity to expand your knowledge and skills while taking time off. Simulations also demonstrate the way computer entertainment software is headed. People want to experience what they perceive as reality. So, in effect, if the past of computer entertainment lay predominantly in fairly mindless shoot-em-ups, the future lies in education. **FC**

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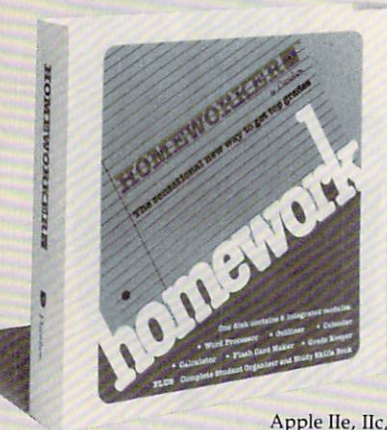
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COMPUTING CLINIC

BY LOUIS WALLACE

If I travel by plane and include software in my luggage, would the x-rays damage it, and how can I protect against the damage?

RICHARD DER
Montebello, California

Airport scanners *could* damage programs on the disk. Place your disks in a separate travel case, such as a disk box, and carry it aboard yourself. Before going through the scanner, show the disks to the security people and ask that they carry them around the equipment because of the possibility of program damage. They will likely have heard the question before. To be extra careful, you can purchase a shipping container that protects disks from electromagnetic fields. Disk manufacturers such as 3M have several of these insulated disk boxes available.

I have a C 128 with a 1571 disk drive. I bought the game *Hacker* by Activision and followed the directions for loading, but it freezes up while loading. I tried to load it on a C 64 and it worked. Is there any way to get it to load on my C 128?

MIKE GAMACHE
Freeport, Illinois

Are you sure you are in C 64 mode on the C 128 when you try to load it? While the game says C 64/C 128 compatible, that just means it works on the C 128 in C 64 mode. It doesn't mean it will work in C 128 mode.

Does Atari make any computers that allow more than four colors on a screen in graphics mode? Also, does Atari have a toll-free 800 number?

JAMES BANCROFT
Salem, Oregon

The new 520ST and 1040ST computers from Atari can display up to 16 colors (from a palette of 512) while in 320 x 200 low-resolution mode. They can also display four colors at once while in 640 x 200 mode, and two (monochrome) when in 640 x 400 mode.

The Atari toll-free number is (800) 662-8274.

Which word-processing programs for the C 64 offer the option of using the RS-232 port (device #2) to connect a printer?

RUSS LANE
Fairfield, Iowa

Many commercial word processors offer the RS-232 option for the C 64. For example, *EasyScript* (Commodore), *HomePak* (Batteries Included), and *SkyWriter II* (Prentice-Hall) support RS-232. If your word-processing needs cannot be met by either of these programs, try your local user group for information on others.

Will the Amiga run IBM software? If so, what equipment do I need?

ERIC JONES
Sylacauga, Alabama

Yes, the Amiga will run IBM software, but in order to do so you need *Transformer*, an IBM-emulation program (\$99 from Commodore), and either an Amiga 5¼" disk drive or IBM software in 3½" format. With either of these combinations, however, you will sacrifice speed.

Soon to come from Commodore is the Sidecar that will allow Amiga users to get full performance from IBM software. The Sidecar is an expansion box that includes the 8086 IBM microprocessor on a card and a 5¼" disk drive. With it you will be able to run IBM software in the Amiga's window feature. It will essentially add a second computer to your system so that IBM and Amiga software can run simultaneously.

Can an Apple ColorMonitor IIc be hooked up to a videocassette recorder?

CHARLES OLSEN
Fridley, Minnesota

Yes, as can any computer monitor (standard NTSC composite) that has a standard RCA jack—and most do. However, you will need two video cables instead of the one needed to operate the computer. Connect the cable from your computer to the "video in" port on the VCR. Then connect another cable from the "video out" port to your computer monitor. That way, as you play a game, the signal will be sent to the VCR first and then to your monitor. The game will be recorded on tape. ☐



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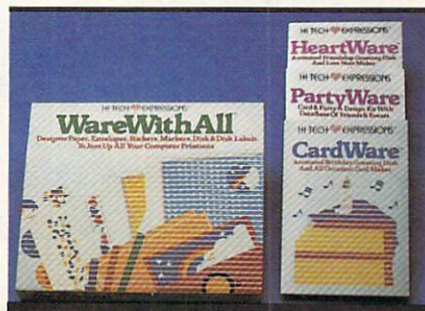
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READERS TELL US: Computers = Better

A LOOK AT OUR READERS

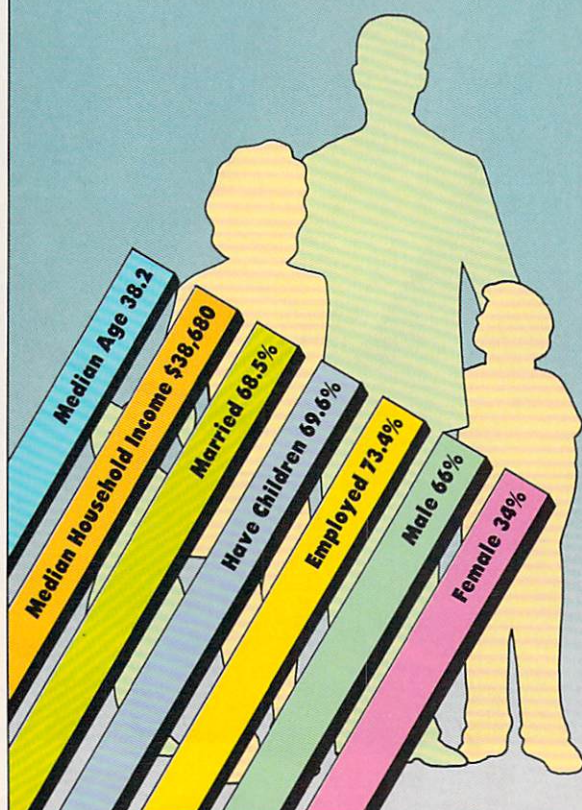
Exactly three years ago, our first issue of **FAMILY COMPUTING** was on its way to newsstands and readers' homes. Thanks to preliminary research, we had a fairly good idea of who our readers were, why they owned or why they planned to buy a computer, and what they wanted from us.

Today, thanks to extensive reader research, a responsive audience, and some hard-learned lessons, we know even more. What does owning a computer mean to our readers? They tell us it means a chance to fulfill their desire to learn more about the technology; it means they won't be left behind; it means they'll be helping their children; it means they'll be able to work at home and manage their homes better in a home office.

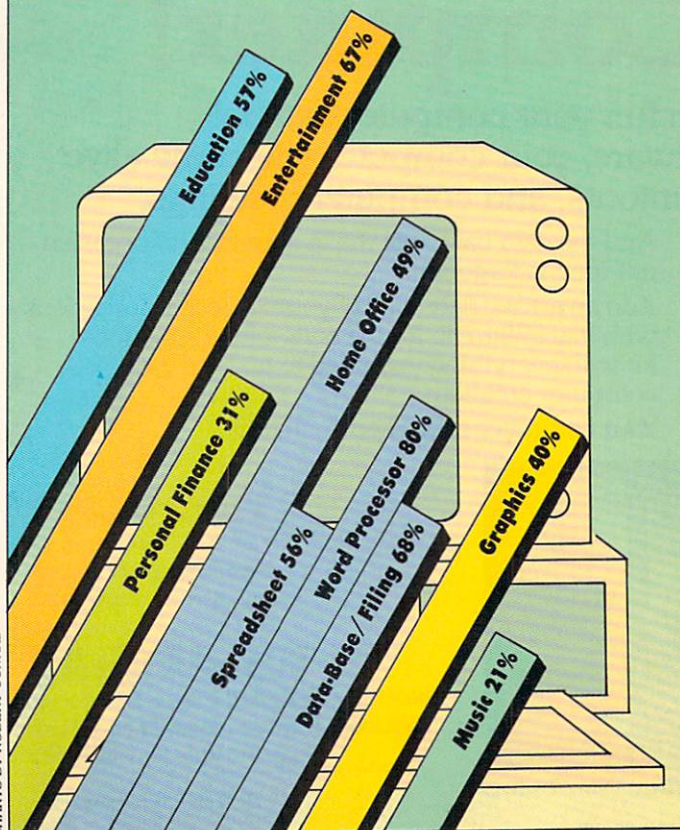
All along the way, we've discovered that you were as fascinated as we with details about our readers. Knowing this information is part of our business, and you've seemed to feel that it was yours. My own theory is that we all like to compare ourselves, to see how we stack up, with other people who are like us in some ways. Extensive new data is in to allow you to do that.

We hired Simmons, a major research firm, to survey our readers. They sent questionnaires to 2,000 readers, selected on a random basis. We were pleased to learn that 61% responded. Here are some more of the results:

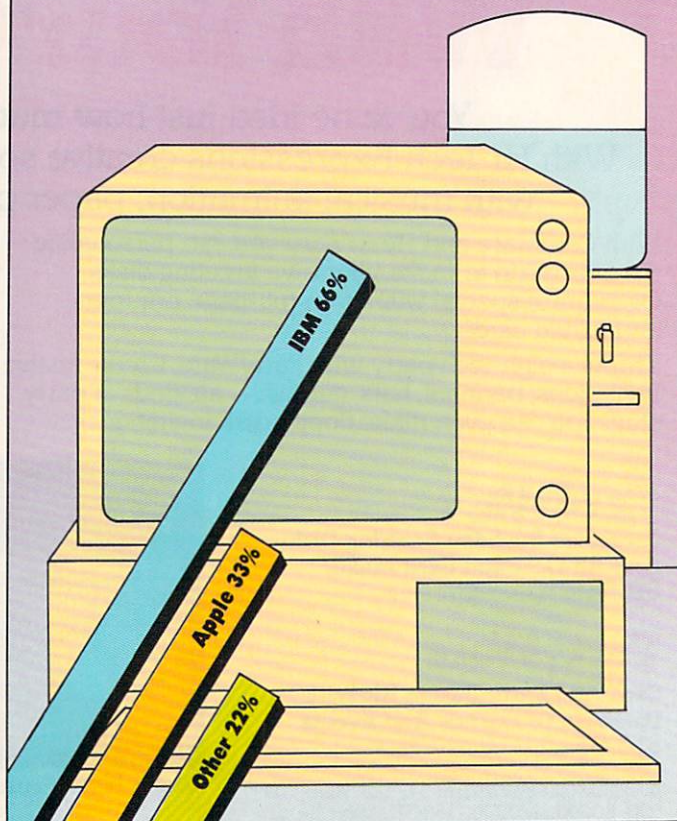
Who You Are



How You Use the Computer

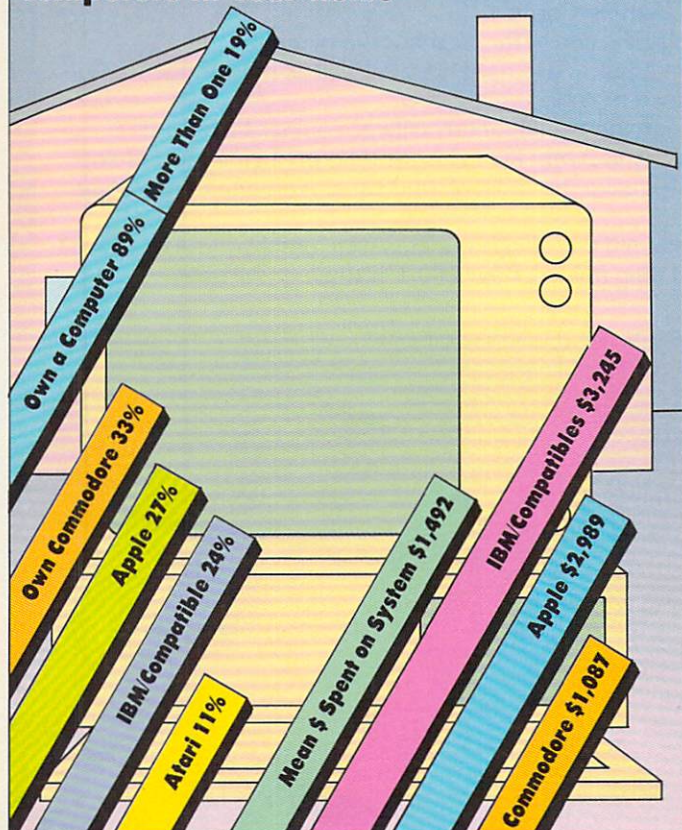


Use of the Computer at Work 56%

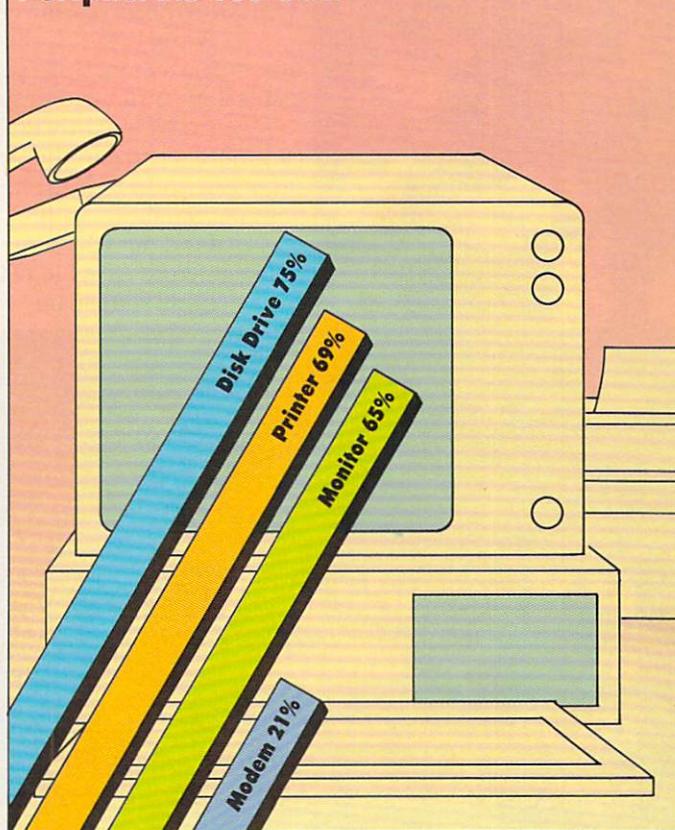


Living, Better Learning, Better Earning

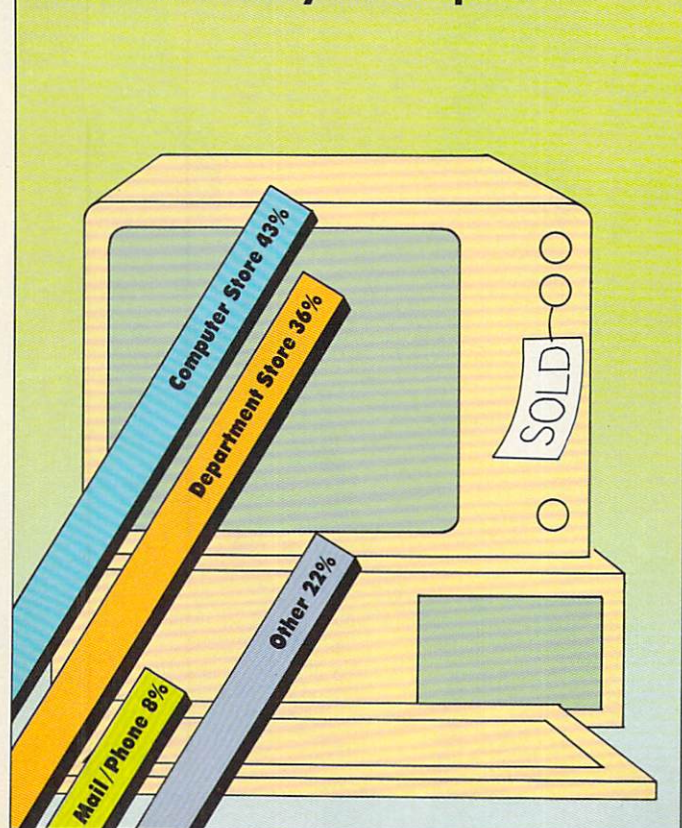
Computers in Your Home



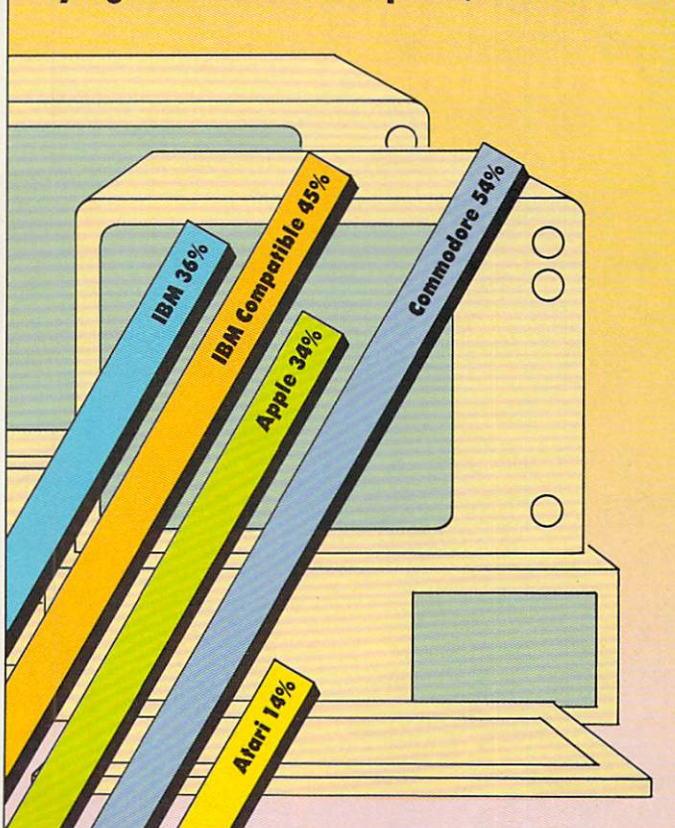
Peripherals You Own



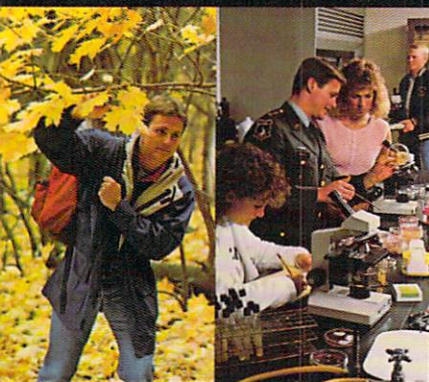
Where Did You Buy the Computer ?



Buying Your Second Computer, What Brand?



ARMY RESERVE OFFICERS' TRAINING CORPS



There's a college course that's helping Rob Bright succeed in his other courses. The Army Reserve Officers' Training Corps.

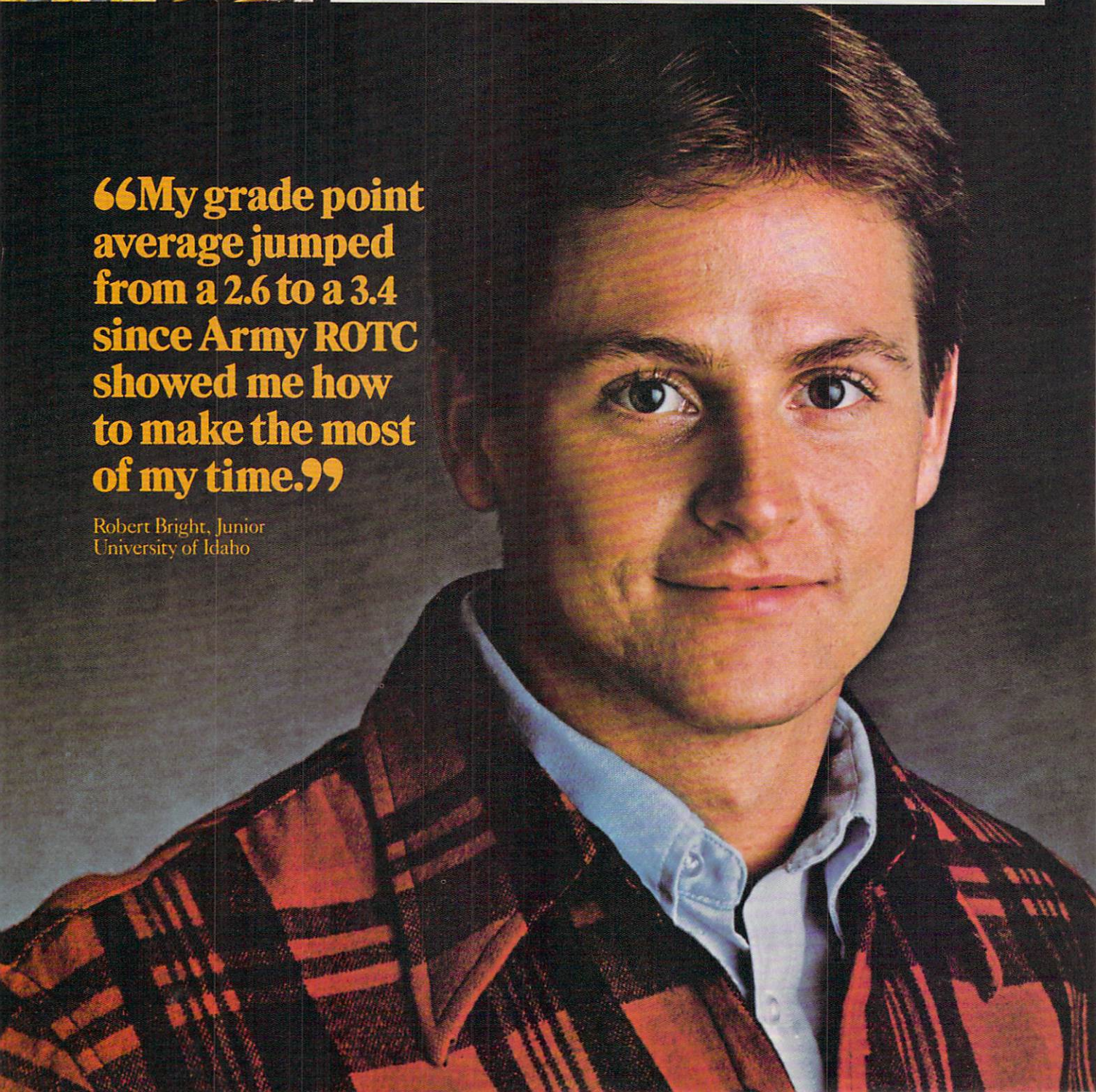
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Add Power and Precision to Your Prose

WITH SPELLING CHECKERS, THESAURUSES, GRAMMAR CHECKERS, AND OUTLINING PROGRAMS **BY STEVE MORGENSTERN**

**FAMILY
COMPUTING**

Writing is a much more demanding way to communicate than speaking.

When you speak, you have all sorts of extra tools at your disposal beyond mere words. You can gesture. You can point. You can wink knowingly. If your description is not organized just right, your audience can ask questions to lead you along.

Written communication is less forgiving. Words and punctuation marks are all you have to get your point across. If you construct your writing poorly, readers will feel stuck, wading through it line by line, until they can make heads or tails out of the material. Often, they give up.

Until the "artificial intelligence people" make truly major leaps, your computer can't write for you. However, word-processing enhancements available right now make it far easier to create prose with impact and clarity and without spelling errors. Whether you're turning out school reports, business memos, or a best-selling novel, help is as near as your disk drive.

TOOL FOR WRITING

The first tool you need is a word processor. (See "Finding the Right Word Processor" in the August issue of *FAMILY COMPUTING*.)

A word processor immediately enriches your writing life. No more retyping entire pages. No more tell-tale correction fluid beneath your words. You can

grab and move letters, words, sentences, or entire paragraphs at the touch of a few keys. Any good word processor makes editing your early drafts far easier than with a pen or typewriter.

Of course, word processing is no longer new, and there have been many software advances in writing with computers over the past few years, including the following features:

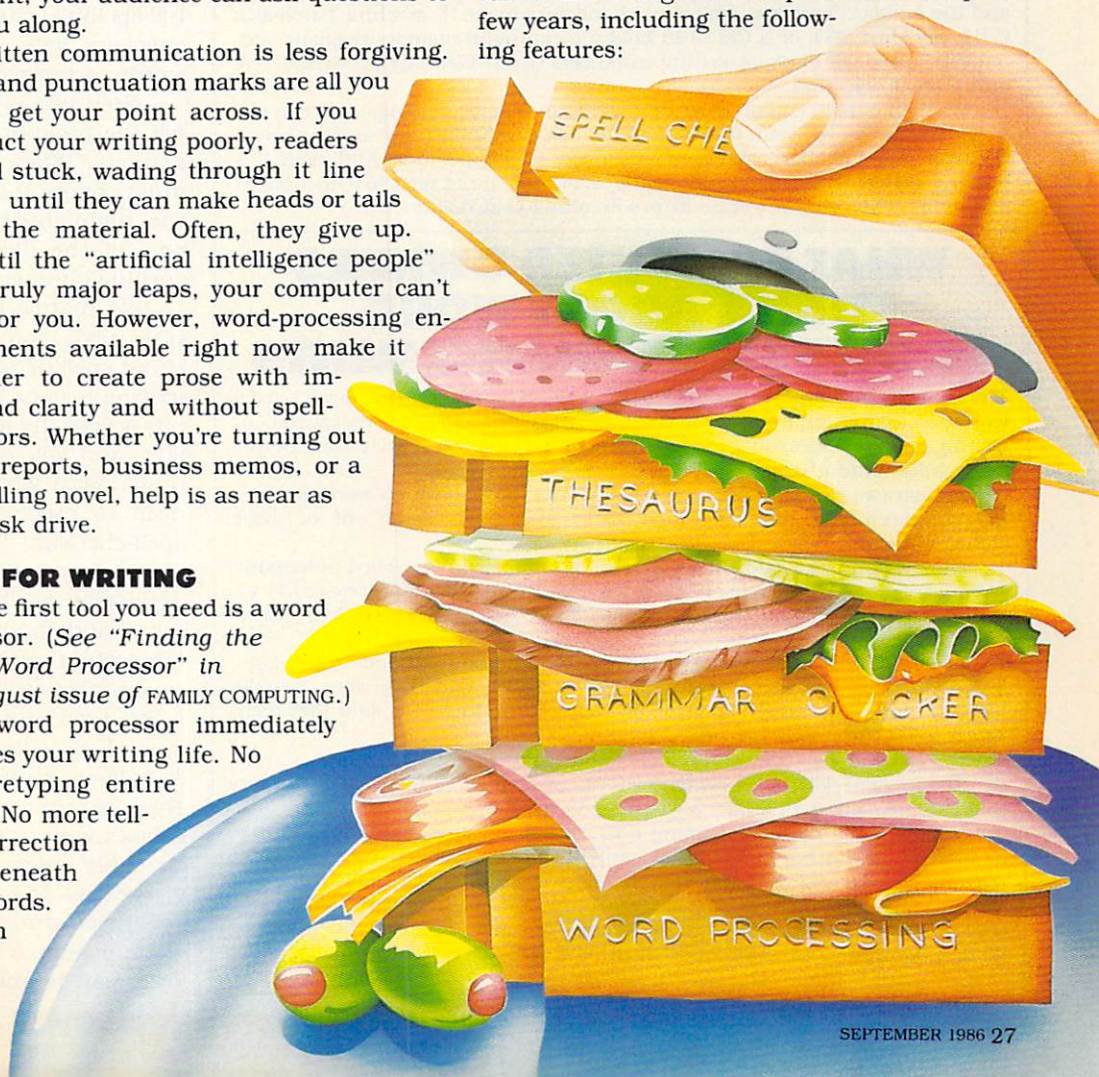


ILLUSTRATION BY RICHARD TEMPERO

Spelling checkers that locate misspellings and typographical errors in your work.

Thesaurus programs to suggest synonyms for words. Using a thesaurus helps you find precisely the right way to phrase your thoughts and avoid repeating the same word.

Outlining software that aids you in organizing your writing and thinking. Unlike formal pen-and-paper outlines, the computer versions encourage you to type in your thoughts as they occur, then organize, reorganize, and organize yet again until your outline flows smoothly.

Grammar and style checkers to point

out potential problems with sentence structure, punctuation, and writing style.

In the early days, each of these tools was usually available only as an add-on package for your word processor. Grammar checkers and thesauruses are still found as separate programs only, but spell-checking capabilities are included as standard equipment with many word processors, and we're starting to see built-in outline modules in high-end word processors like *Microsoft Word*. Whether you're shopping for a new word processor or thinking about adding features to your current one, there is a wealth of choices.

TWO TYPES OF WRITING ENHANCEMENTS

Should you buy a traditional, stand-alone enhancement or one that's memory-resident?

You'll frequently run into three synonymous terms when shopping for word-processing enhancements: "memory-resident," "pop-up," or "RAM resident" (RAM stands for Random Access Memory, the portion of your computer's memory where programs and information are stored while power is on).

This type of program, loaded into your computer along with the word processor, waits and is ready to work when you ask for it. You might, for example, use a memory-resident spelling checker. Type as usual, and then, when a word looks odd, a simple keystroke combination will make the spelling checker look it up. The pop-up checker takes over immediately—without having to stop your word processor, load the spelling checker, check the word, and then reload the word processor. It even delivers you back to where you were in your main document.

The term "RAM" in RAM-resident implies the need for memory, which is why you'll most often find such software for computers with 256K memory (or greater)—the IBM PC and compatibles, the Macintosh, the Atari 520ST, and the Amiga. There just isn't enough memory in a 64K machine (such as a C 64, an Atari 800, or a CoCo) to hold a meaningful memory-resident add-on; you'll need stand-alone writing enhancers. Even 128K Apple owners have only a small selection.

With an enhancement program waiting in memory's wings, you can call it up instantly, without the bother of disk swapping and loading time. However, RAM-resident software eats up a lot of memory. And even if a spelling checker resides in RAM, nearly all of them must refer to a disk-based dictionary when they are actually proofreading your document.

ELIMINATE MISSPELLINGS FOREVER

Some of us insist on putting "i" before "e," even after "c," or when pronounced like "a" as in "neighbor" or "weigh." And even good spellers may not be perfect typists. Luckily, we have spelling checkers to show us the error of our "wieghs."

All spelling checkers work basically the same way. They compare the words in your document against a dictionary of correctly spelled words, and they let you know when a word in the document isn't in the dictionary.

These programs examine your spelling in two steps. First, you tell the checker to compare your text against its dictionary. The disk drive whirrs and spins for a while, and the program highlights the words that are potential spelling errors (see *Figure 1*). Most spelling checkers will also suggest correctly spelled words as replacements.

Step two is your responsibility. You must tell the program how and when to make corrections. When it catches a misspelling, you must choose the proper word. If you've spelled the highlighted word correctly, but it's not part of the dictionary, you need to tell the spelling checker to accept it as-is.

No matter how well the program checks your text, you still must know something about spelling to fix any errors. If you type "My writing is pour," the spelling checker will happily accept the mistake. "Pour" is spelled properly, and you cannot expect the program to understand what you meant to say. You still need to proofread your work; computerized spell-checking just makes it easier.

In fact, using a spelling checker will improve your spelling skills by pointing out mistakes and forcing you to correct them. Jim O'Laughlin, a teacher at South Windsor High in Connecticut, told us how his school uses word processors with spell-checking in the special-education program. "We have 56 to 60 special-ed students," O'Laughlin said, "and they are required to do their typing for all their classes with a word processor. They also use *Sensible Speller IV* [Sensible Software] to spell check any document they work on. This system helps students get past hurdles in writing their papers. They would ordinarily complete their papers and that's all. With word process-

WHAT COMPUTER OWNERS THINK ABOUT WORD PROCESSING ENHANCEMENTS

The majority of computer users who own a word processor have never tried a word-processing enhancement, such as a spelling checker, thesaurus, or writing analyzer, according to a FAMILY COMPUTING survey conducted on CompuServe Information Service.

Almost two-thirds of our 179 respondents (63%) have no word-processing enhancements, and 53% have never even tried using one of these software add-ons.

Our respondents said they would be more likely to use word-processing enhancements if they came on the same disk as their word processor (34%), if they were available for their computer (23%), and if they were less expensive (20%).

Of the 37% of word-processor owners who do have an add-on package, 45% said these enhancements were "great," 40% said they were "usually helpful," 11% called them "marginally helpful," and just 2% said they were "useless."

Here's what else the add-on owners had to say:

Spelling checkers were owned by 93%, while only 12% have a computerized thesaurus and 12% own a writing analyzer.

The most cited reason for using a word-processing enhancement is that it aids in preventing errors in documents (45%). Other frequently cited reasons include improved writing (38%), and improved spelling (31%).

Measuring frequency, 32% use word processing add-ons 10% to 50% of the time; 21% use them less than 10% of the time; 18% use them 50% to 90% of the time; 14% always use them; and 10% never use them.

—BERNADETTE GREY

ing and spell checking, the students are more likely to make corrections."

HOW BIG IS YOUR DICTIONARY?

The size of the dictionary supplied with a spelling checker is a major competitive point to consider. The dictionaries range from about 15,000 words to over 100,000. Depending on your type of writing, the absolute size of the dictionary may or may not have much significance. For instance, a high-school student writing essay assignments will rarely use a word that isn't in a 15,000-word dictionary. But a small dictionary would be inadequate for anyone writing a doctoral thesis.

Of course, no dictionary—on disk or on paper—will include all the words you use. Proper names will be missing, along with any distinctive vocabulary that's part of your work. A good spelling checker offers a solution by letting you add words to an auxiliary dictionary. Next time you check a document, the program will accept these added words and not flag them as suspected errors.

The ability to create auxiliary dictionaries is a big factor to consider when shopping for spelling checkers. Some allow you to add thousands of words to the file; others limit you to fewer than one hundred.

One helpful approach lets you build several auxiliary dictionaries. That way, if you are writing a technical document, you use the dictionary filled with your jargon. And when you write to Mom, you load the auxiliary dictionary that has the names of all your relatives. Ready-made dictionaries for professional word processing needs—such as law and medicine—are also available.

CHECK SPELLING AS YOU TYPE

How quickly do you need to find your spelling errors? The first spelling checkers required spell checking an entire document, and only after you had exited your word processor. Many fine spelling checkers still work that way. Then came the capability to check the spelling of just the words on-screen, or in a designated block, or even a single word. Software that checks your work as you write is the latest development.

The ground-breaking program here is *Turbo Lightning* (Borland International) for the IBM PC and compatibles. *Lightning* checks each word you type immediately after you hit the space bar or add a punctuation mark. The computer beeps if the word is not found, letting you make corrections on the spot. Several similar programs have recently appeared for the IBM PC world, as has *MacLightning* (Target Software), a work-alike program for Macintosh users.

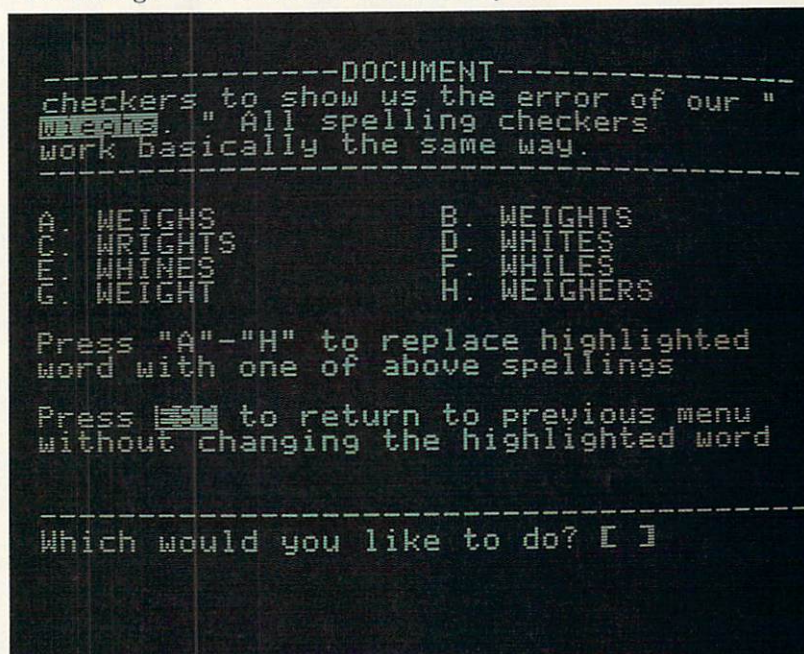
THE SEARCH FOR A BETTER WORD

After the dictionary, the thesaurus was another reference work to make the jump from bookshelf to floppy. When you're stuck for just

the right word, or have used one word several times and need a synonym to break up the monotony, a computerized thesaurus comes in handy.

Solid help for writers was found in *Word Finder* from Writing Consultants. In its latest version, this program will offer synonyms for 15,000 different key words, providing a total of 220,000 synonyms.

The ability to cross-reference entries is a great feature in *Word Finder* and several other thesaurus programs. Let's say you've written "The little girl was smart." In the back of your



mind, you know there's a better word than "smart"—one that refers specifically to bright children.

Place the cursor on the word "smart," and then press a two-key combination to call up *Word Finder*. The thesaurus suggests 91 adjectives and four verbs as close relatives of "smart." You peruse the list: "alert" . . . "clever" . . . "wily" . . . no, not exactly what you had in mind. You find "intelligent" on the list; that's close, but not right on the money. No problem. Just move the cursor to "intelligent," and its synonyms appear, another 43 adjectives (see *Figure 2*). Some were also found under the "smart" listing, but wait. There's "precocious"—the exact word you wanted. Put your cursor on "precocious," and ask *Word Finder* to substitute it for "smart" in your document.

An on-line thesaurus encourages you to look for alternative ways to phrase things. Reaching for the dusty book on the shelf across the room just seems like too much trouble most of the time. Tapping a few keys to look up a word is fun and inspires you to use more variety in your vocabulary—or maybe I should say, more diversity in your verbiage. But you still need to use good judgment; don't let a thesaurus seduce you into using words that aren't natural to your voice or aren't appropriate for your subject.

Figure 1: This screen is from *The Sensible Speller*. Notice how the misspelled word "wiegths" is highlighted in context, with eight suggested spellings listed below.

STEVE MORGENSTERN is a contributing editor for FAMILY COMPUTING. In last month's issue, he reviewed word processors in Part 1 of our series, "Guide to Writing With Computers."

SOFTWARE TO ENHANCE THE ACT OF WRITING

Title/Publisher Phone/Price	Hardware Requirements	Software Requirements	Comments
SPELLING CHECKERS			
ELECTRIC WEBSTER Cornucopia Software, Inc. (415) 524-8098 \$130	IBM PC/PCjr.* Two drives recommended.	Any word processor that creates ASCII text files. Also <i>WordStar</i> .	50,000-word dictionary. Checks full documents and will suggest correct spellings. Allows you to create auxiliary dictionary. Also contains grammar checker that examines text for awkward phrasing, punctuation errors, use of slang or clichés, and more.
KWIK-SPELL Datamost, Inc. (818) 709-1202 \$20	Reviewed on C 64/128. Also for Atari.	<i>Kwik-Write</i> and other word processors that create sequential (ASCII) text files.	30,000-word dictionary. Checks full documents, but does not allow corrections during spell check. Can print errors for later correction and lets you add words.
MACLIGHTNING Target Software, Inc. (305) 252-0892 (800) 622-5483 \$100	512K Macintosh. Two drives.	<i>MacWrite</i> , <i>Microsoft Word</i> , <i>Excel</i> , <i>Omnis 3</i> , <i>Jazz</i> , <i>PageMaker</i> , <i>ReadySetGo</i> , <i>Microsoft File</i> , and more.	80,000-word dictionary. Memory-resident desk accessory. Checks spelling as you type selected text block or full document. Create auxiliary dictionaries. Also highlights possible grammar errors, but without explanation.
RANDOM HOUSE REFERENCE SET Reference Software (415) 947-1000 (S89 with thesaurus) \$69	IBM PC.* Two drives.	17 preset, plus custom installation and ASCII text files.	50,000 and 80,000-word dictionaries, drawn from Random House Dictionary. Memory- resident spell checker for single words or screens; also checks full documents. Contains thesaurus with 50,000 synonyms keyed to 5,000 words. A useful writing add-on.
THE SENSIBLE SPELLER Sensible Software, Inc. (313) 258-5566 \$125	64K Apple.	<i>AppleWorks</i> , <i>Word Juggler</i> , <i>Apple Writer</i> (ProDOS), and any ASCII text file. DOS 3.3 <i>Sensible Speller</i> available.	80,000-word dictionary drawn from Random House Dictionary. Not the easiest to use, but offers substantial vocabulary, ability to customize features, and auxiliary dictionaries.
SPELLPACK Batteries Included (416) 881-9941 \$50	C 64/128.	<i>PaperClip</i> . Also works with compatible systems, such as <i>Word Pro</i> .	15,000-word expandable dictionary. Integrates fully with <i>PaperClip</i> , or works as a separate program with other word processors. Does not suggest alternative spellings.
SPELLSWELL Greene, Johnson Inc. (408) 375-2828 \$60	Macintosh.	<i>MacWrite</i> , <i>Microsoft Word</i> , <i>ThinkTank</i> , ASCII text files.	60,000-word dictionary. Sophisticated spell- checking system picks up proper nouns typed without capitalization, incorrect abbreviations, contractions, and hyphenation.
THUNDER! Batteries Included (416) 881-9941 \$40	Atari 520ST. Planned for Amiga and Macintosh.	<i>PaperClip Elite</i> , <i>HomePak</i> , <i>HabaWriter</i> , <i>Regent Word</i> , <i>1st</i> <i>Word</i> , and most GEM-based applications.	50,000-word dictionary. Desk accessory mode lets you correct words as you type; stand-alone version corrects finished documents. Includes auxiliary dictionary and word count.
TURBO LIGHTNING Borland International (408) 438-8400 \$100	256K IBM PC/PCjr.* Two drives.	Seven word processors, plus other preset applications. Custom installation.	83,000-word dictionary. Memory-resident; checks spelling as you type or one screen at a time. Suggests replacements. Also includes thesaurus with 50,000 synonyms, using 5,000 keywords that can cross-reference.
VIP SPELLER VIP Technologies (805) 968-4364 \$50	32K Tandy Color Computer, with Extended Color BASIC. One drive.	<i>VIP Writer</i> , <i>Color Scripsit</i> , <i>Elite*Word</i> , or any ASCII text file.	50,000-word dictionary. You can mark unrecognized words in your text or change them. Lets you add words to main dictionary or create auxiliary dictionaries.
WEBSTER'S NEW WORLD SPELLING CHECKER Simon & Schuster, Inc. (212) 333-5800 \$60	Reviewed on IBM PC/PCjr.* Also for 64K Apple (DOS 3.3), 128K Apple IIe/Ic (ProDOS).	10 presets, plus custom installation and ASCII text files.	114,000-word dictionary includes computer terms. Preview mode allows quick acceptance of correctly spelled words. User can add words in groups to auxiliary dictionaries.
THESAURUSES (Note: For more thesaurus software, see Random House Reference Set and Turbo Lightning under Spelling Checkers.)			
WEBSTER'S NEW WORLD ON-LINE THESAURUS Simon & Schuster, Inc. (212) 333-5800 \$70	IBM PC/PCjr.* Two drives recommended.	28 word processors, plus custom installation. <i>ThinkTank</i> , <i>Framework</i> , <i>Symphony</i> , <i>Q&A</i> , <i>Ready!</i> , and <i>SideKick</i> .	120,000 synonyms, with 20,000 keywords. Memory-resident program offers good selection of alternatives and excellent cross-reference ability. Top-notch manual also contains good information about writing in general.
WORD FINDER Writing Consultants (716) 377-0130 \$80	IBM PC.*	22 word processors, plus ASCII text files.	Massive 220,000-word synonym file, with 15,000 keywords. Memory-resident program provides tremendous vocabulary and great cross-reference ability. Will also work as stand- alone program.
OUTLINING PROGRAMS			
READY! Living Videotext, Inc. (415) 964-6300 \$100	IBM PC.*	None required. Preset file transfers to <i>PFS:Write</i> , <i>Word</i> <i>Perfect</i> , and <i>WordStar</i> . ASCII text and custom installation.	Similar to <i>ThinkTank</i> , but it's memory- resident, so it can pop up while you work with other programs. More limited text-handling than <i>ThinkTank</i> . Excellent add-on for organizing and keeping addresses.
THINKTANK Living Videotext, Inc. (415) 964-6300 \$150-\$195	Reviewed on Apple IIe/Ic. Also for 64K Apple II+, IBM PC.* Macintosh. Two drives.	None required. Will work with any word processor that uses ASCII text files.	Great tool for structuring your ideas. Controls are instinctive and performance excellent. You can insert up to four pages of text under headings. Print outline or transfer to word processor.
THINKWORKS Megahaus (619) 450-1230 \$125	128K Apple IIe/Ic. Two drives recommended.	None required. Preset file transfers to <i>AppleWorks</i> , or ASCII text file.	Outlines created can be printed or saved as <i>AppleWorks</i> files. Creates outlines in traditional format, complete with text entries.
GRAMMAR AND STYLE CHECKERS (Note: Electric Webster, listed under spelling checkers, also has a grammar and style checking module.)			
RIGHTWRITER 2.0 DecisionWare, Inc. (813) 952-9211 \$95	192K IBM PC/PCjr.* Two drives.	12 preset word processors, plus ASCII text files. Partially compatible with eight more word processors.	Easy-to-use enhancement reads your text and then produces marked-up backup copy with comments on word usage, readability, sentence structure, and punctuation.
SENSIBLE GRAMMAR Sensible Software, Inc. (313) 258-5566 \$100	128K Apple IIe/Ic.	<i>AppleWorks</i> , <i>AppleWriter</i> , <i>Format II</i> , <i>Mouse Write</i> , <i>MouseWord</i> , <i>PFS:Write</i> , <i>Word</i> <i>Juggler</i> , ASCII text files.	Works much like a spelling checker, comparing your text to a library of over 2,000 commonly misused phrases to find clichés, informal or pompous usage, and other errors.

*Title listed for the IBM PC/PCjr will also run on many IBM PC compatibles; because of the proliferation of compatibles, check with the publisher of the program or your dealer for compatibility. Unless otherwise noted, minimum memory requirements are 48K for Apple II series, 48K for Atari 800/XL/XE series, 128K for IBM PC/PCjr or compatibles, and 128K for Macintosh.

OUTLINING: THE POWER TOOL

Most of us learned how to prepare formal outlines in school—you know, Roman numeral headings, then uppercase letter subheads, lowercase letter sub-subheads, and so on. We then promptly forgot all about it. Part of the problem, I suspect, is that while an outline is a terrific tool for organizing your presentation, it's too difficult to *reorganize* the points in a pen-and-paper outline.

Outlining with computers is a whole new ball game. Type in your thoughts, creating headings and subheadings as they strike you. Then you're free to move items around. You can promote subheadings to major headings, or move that great idea from the opening to the conclusion.

The program that defined outline processing was *ThinkTank* from Living Videotext. It does away with formal letter-and-number systems while you create your outline; subheadings are simply indented under main points. Whenever you want to view the overall structure of your work, you can collapse sublevels.

ThinkTank will handle large sections of text as well as headings and subheads. That's a key difference between this program and some others on the market. You can write your entire paper using *ThinkTank*'s built-in word-processing features, then transfer your work to your regular word processor for final polishing and text formatting.

Contrast *ThinkTank* with *Ready!*, a recent release from the same company. *Ready!* is a memory-resident program, which means you can build an outline and then view it or change it while using your word processor. You cannot enter large blocks of text, however, into your *Ready!* outline. Consider the trade-off between the immediacy of memory-resident software and the fuller functions found in stand-alone outliners when buying one.

PROGRAMS TO CHECK YOUR GRAMMAR AND WRITING STYLE

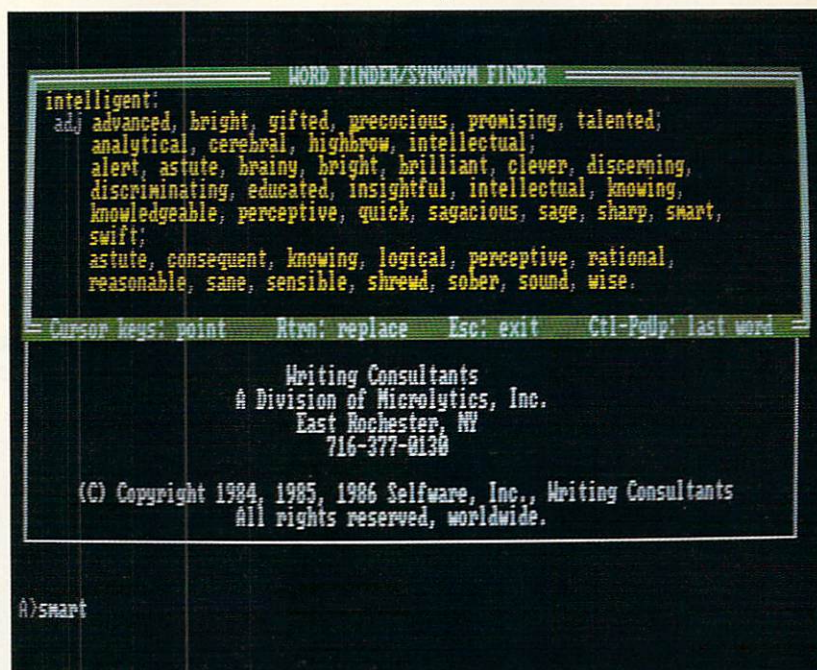
There's a fine line between artificial intelligence and artificial ignorance, and software that checks your grammar and writing style is balanced precariously on that line.

None of the grammar and style checkers I've seen should be considered even a remote substitute for Miss Nagle, my ninth-grade English teacher. She understands the language and its complexities in rich detail. Instead of a good teacher, I'm now left with software tools which, at best, can claim only hit-or-miss accuracy.

A full comprehension of English grammar calls for more rules than today's computers can handle. A grammar checker inspects your writing in two ways. First, it applies some simple rules. If it finds a period followed by two spaces and then a lowercase letter, it will recognize that you've probably made a capitalization error. Similar rules can uncover other

punctuation problems, including repeated words and run-on sentences.

Second, just like a spelling checker, a grammar checker can compare the words and phrases in your document to its master file, alerting you to potential problems. When it finds "ain't" for example, it can tell you that "ain't" is substandard or informal usage. If "would of" appears in your writing, the program might indicate that the phrase is often used incorrectly; "would have" is probably the better choice. However, it cannot tell you that



your nouns disagree with your verbs ("The boys flies the kite") or that "me and Harry" should be "Harry and me"—or, for that matter, "Harry and I."

By supplying useful advice in evaluating writing, however, today's grammar and style checkers can offer accuracy. For example, *Rightwriter* (Decisionware) picks up punctuation errors and analyzes the reading level of any writing based on word and sentence length, and looks for words used repetitively. *Rightwriter* also searches for use of the passive voice; for instance, it suggests "Ride the horse" instead of "The horse should be ridden." While not grammatically incorrect, the passive voice weakens the power and pace of your prose if used often.

When you want to make your writing leaner and more to-the-point and eliminate many common mistakes, explore grammar- and style-checking software.

There you have it—a host of tools to make writing easier and better. You'll still have to think clearly and comprehensively for your writing to succeed, but that's only because computers will never be able to replace a human mind. (Editor's note: Follow us next month, as the "Guide to Writing With Computers" continues with a series of tips and tricks for writing with your word processor.) ■

Figure 2: The thesaurus program Word Finder lists its synonyms for "intelligent," such as "precocious," which refers specifically to bright children.

Computing Family 1986 of the Year

HOW THE OFSTEHAGES IMPROVED LIFE ON THE FARM, IN THEIR COMMUNITY, AND AT SCHOOL

BY CHARLOTTE PIERCE



Meet the Ofstehages (clockwise from left): James, Andrew, Glenda, Bernard, Steven, Daniel and Peter.

"We are a South Dakota farm family of seven with a variety of interests and activities. My husband, Bernard, is a former public-school band director whose lifelong ambition was fulfilled five years ago when he was able to begin farming on the land his family has owned since the turn of the century.

"I'm also a former music teacher. I currently raise broiler chickens and eggs for sale and do some creative writing. Although our business is now raising corn, beans, oats, hogs, and chickens, we enjoy sharing our musical training with our children and our community. Both Bernard and I direct church choirs and we frequently sing together in public. Bernard enjoys woodworking and builds furniture and toys in his spare time, while I enjoy sewing,

gardening, and food preservation—skills which provide much of our family's clothing and food. Our entire family is active in our church—a country church that has the distinction of being the first Lutheran church established in the Dakota Territories. Our five sons are interested in sports, books, and all the exciting things there are to do on the farm.

"By all appearances, we would be the last family you would expect to find with a computer at the center of its daily life, but we have proven that appearances can be deceiving. At Cedar Lawn Farm, this is the Year of the Computer!"

—Glenda Ofstehage, 37, of Elk Point, South Dakota, in her grand-prize winning entry for Computing Family of the Year

Back in 1903, when Bernard Ofstehage's grandfather built the farmhouse at Cedar Lawn Farm, he couldn't have imagined that an "electric gadget" called a computer would take the place of his ledger and pencils. And in 1862, the congregation at the newly built St. Paul Lutheran Church couldn't have guessed that in 1986 the Ofstehages and their neighbors would be discussing electronic spreadsheets, screen displays, and software after the weekly services.

Up until a year ago, the Ofstehages themselves would have had a hard time estimating the number of uses their family and friends would find for their IBM PCjr. As Glenda Ofstehage told FAMILY COMPUTING: "The current farm economy has limited available funds, so we try to get maximum value from every purchase we make. This has been challenging, and I think it has made the computer more of a learning tool. Not only have the seven of us become excited about computing, but our enthusiasm has even rubbed off on our neighbors."

GETTING THE BUG

The computer bug bit Glenda and Bernard's family after their 13-year-old son, Steven, won second prize at a school science fair last year. His exhibit, called "Would You Kiss a Pig?," which investigated the bacterial count in the saliva of farm animals, was completed with the help of one of the school's computers. The night of the science fair, Steven took his mother to see the school's computer lab. "That's when it all started, I guess," said Steven.

He was right. That night, Glenda realized how a computer at home could help all of her sons. She also saw that a computer could help her run the household and keep on top of her broiler chicken and egg business. ("It really does pay to count your chickens," she quipped.)

But at first, reasoning and friendly pressure from Glenda and the boys didn't convince Bernard that the expense would be worthwhile. "I admit I

Charlotte Pierce is FAMILY COMPUTING's managing editor.

was the last holdout when everybody was campaigning to buy a computer," said Bernard, 39. "I thought I could do just as much with the pencils my marketing firm gives me every time I sell a load of hogs!"

Then, "The Plan" was conceived—the family would forego birthday and Christmas gifts until enough money was collected in a savings account to buy a computer—and a dream crept into the realm of the possible. When Bernard's sister in Houston, Texas, offered to sell them her IBM PCjr, Bernard finally decided that this computer would be a good diversified machine for "Glenda and the boys."

THE COMPUTER RISES WITH THE CHICKENS

Everybody in the Ofstehage family shares chores around the farm, and everybody uses the computer. "It's usually turned on at about 6:30 a.m. and never gets a chance to cool down. There's always somebody looking over your shoulder to see what you're doing, or waiting his turn," said Glenda. "We don't have to nag the kids to get away from the TV, either. It's more like, 'don't fight over the computer.'" Steven and 6-year-old James are especially competitive for time on the computer, and Daniel, 7, has actually taken the initiative to read about computers on his own.

For Daniel, who has to limit his physical activities because of an illness, the computer is an ideal outlet for his creative energy. He loves to play *Monster Math* (IBM), a program that has improved his math grades in school. Daniel's winter project was to make a spelling list from every book he was reading using *Spellicopter* (DesignWare), and to learn to spell 10 new words from each book. According to Glenda, "it seemed quite amazing to hear a 7-year-old spelling words like 'embryo' and 'rhinoceros.'"

Daniel was due to enter the hospital in Des Moines, Iowa, for an operation the day after FAMILY COMPUTING notified the family that it had won the grand prize. "Winning the contest really picked up everybody's spirits," said Bernard. "Daniel and his mother even looked at our Tandy 1000 (Computing Family of the Year's grand prize) in the Radio Shack Store the day they got to Des Moines."

James is entering the first grade this fall, and "he's probably benefited from the computer more than any of us," said his mother. James suffered a hearing loss during the past year, so Glenda devised games and activities on the computer that helped him learn color names, numeric values, letter sounds, and even some beginning reading, so that he could keep

up with his kindergarten classmates. "His hearing problem is nearly history now, but the extra confidence he gained as a result of developing computer skills continues to help him do well at school," she noted.

Four-year-old Peter can read the names of all of the family members and, with *KinderComp* (Spinnaker), he has taught himself to type most of them, too. And though Andrew is only 2 years old, he is also inspired by the computer revolution at Cedar Lawn Farm. "Andrew is drawn like a magnet to his Daddy's lap whenever there's work to do!" Glenda commented.

Steven, the family's budding programmer, has already created a color-identification program for his brothers in BASIC, and one for his father that keeps track of data on the farm's 88 hogs.

COMPUTERIZING THE FAMILY FARM

The real workhorse program at 550-acre Cedar Lawn Farm is *SuperCalc* (Computer Associates). "I learned how to use *SuperCalc* last winter, and now I actually enjoy keeping financial records on the computer. It's important to have complete, clear records when you go to talk to lenders," said Bernard. "The spreadsheet



"OUR COMPUTER IS USUALLY TURNED ON AT ABOUT 6:30 A.M. AND NEVER GETS A CHANCE TO COOL DOWN. THERE'S ALWAYS SOMEBODY LOOKING OVER YOUR SHOULDER TO SEE WHAT YOU'RE DOING, OR WAITING HIS TURN."—GLENDA OFSTEHAGE


makes it easy to show projections and the year-to-year operation of the farm. I did that for the first time last spring, and it really helped.

"The county has been holding meetings to explain the new federal farm program," he continued. The county provided a worksheet, and Bernard transferred his numbers to *SuperCalc*. The program figures out how many extra bushels of corn the government will purchase at a certain, guaranteed price, how much financing the farmer must obtain, and how much land he should hold fallow, or idle, that year.

"The difficult part is that we get some money back this year, some next spring, and some a year from now, from this year's planting," Bernard explained. "Some farmers lease acreage from eight or nine landowners in different counties, so it gets confusing. I've figured out the program for several of my neighbors; they just furnish me with three figures and I give them a printout for each parcel of land."

"Since I've just started figuring out the crop budgets on the spreadsheet, it's a little early to see if the computer will improve the efficiency of our grain production. But I've already seen the positive effect the computer's had on our livestock operation."

A TOOL FOR WORK, PLAY, AND SCHOOL

"The children's awareness of the wealth of learning that the world has to offer is so easily awakened by their computer experiences," Glenda explained. "It's really fun watching them learn. We are a family that likes to spend a great deal of time doing things together, and our computer has been a superb investment. We can share our recreational and learning time with our computer, as well as use it individually in our work, play, and school activities." 

CONTEST WINNERS

Grand Prize, a 256K Tandy 1000 computer, BERNARD and GLENDA OFSTEHAGE and children STEVEN, DANIEL, JAMES, PETER, and ANDREW, of Elk Point, South Dakota

First Prize, a 128K Apple IIc computer, GEORGE and CHERYL KING and children, NICOLE and JJ, of Claremont, California

Second Prize, a 512K Atari 520ST computer, CHRIS and JANICE MCNEIL and children, DALE, BRIAN, and SCOTT, of San Diego, California

Third Prize, a Hayes Smart Modem 1200, ROBERT and JOYCE McDONALD and children, HEATHER, LAURA, and SCOTT, of San Antonio, Texas

Fourth Prize, a Thompson RGB monitor, EDWARD and KATHY COPLEY and children STEPHEN, JONATHAN, and MICHAEL, of Katy, Texas

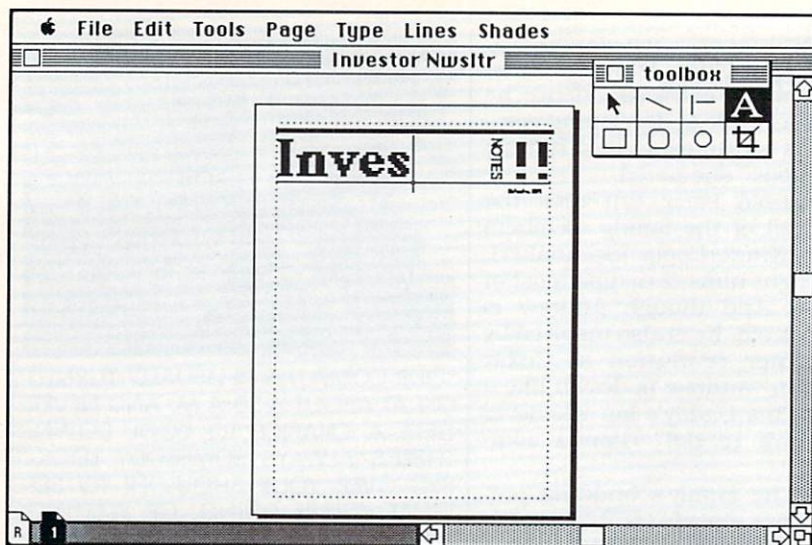
Fifth Prize, \$250 worth of software, the BROWN-DEMPSEY family of Graham, Washington; the CAPLAN family of North Haven, Connecticut; the CORNELL family of Middlesex, New Jersey; the EDWARDS family of Minneapolis, Minnesota; the HUBERS family of Pantego, North Carolina; the HUNT family of Sartell, Minnesota; the MARGARITES family of Burbank, Illinois; the MCCOY family of Liberty, Missouri; the SANT family of Cincinnati, Ohio; and the WOODWARD family of Franklin, Idaho

Sixth Prize, a Seiko PC Datagraph wrist terminal, the MICHAELS family of Lakewood, Ohio

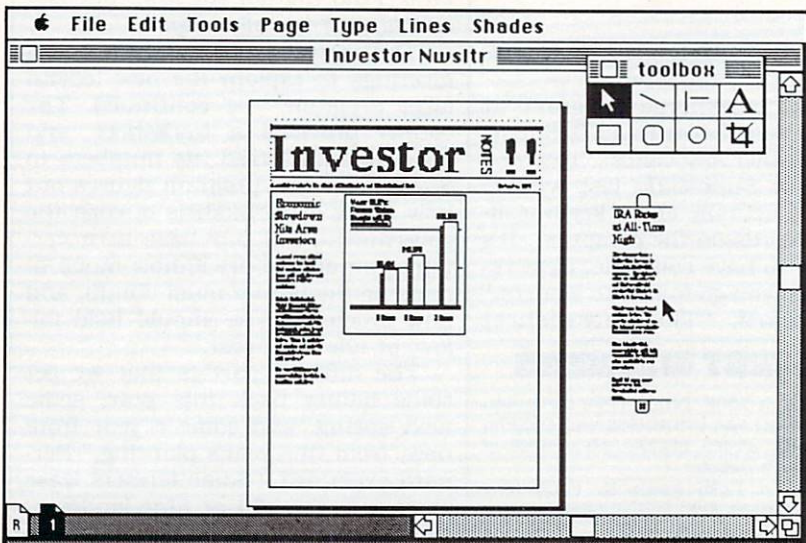
COMPANIES CONTRIBUTING PRIZES:

Activision, Apple Computer Corp., Atari Corp., Avalon Hill, Bantam Software, Batteries Included, CBS Interactive Learning, Davidson & Associates Inc., Electronic Arts, Epyx, Hayden Software, Hayes Microcomputer Products, Infocom, MicroProse Software, Microsoft Corp., Mindscape Software, Random House Software, Scholastic Software, Seiko, Sierra On-Line, Simon & Schuster, Spinnaker Software, Springboard Software, Strategic Simulations, SubLogic, Tandy Corp., Thompson Consumer Products Corp.

Desktop Publishing:

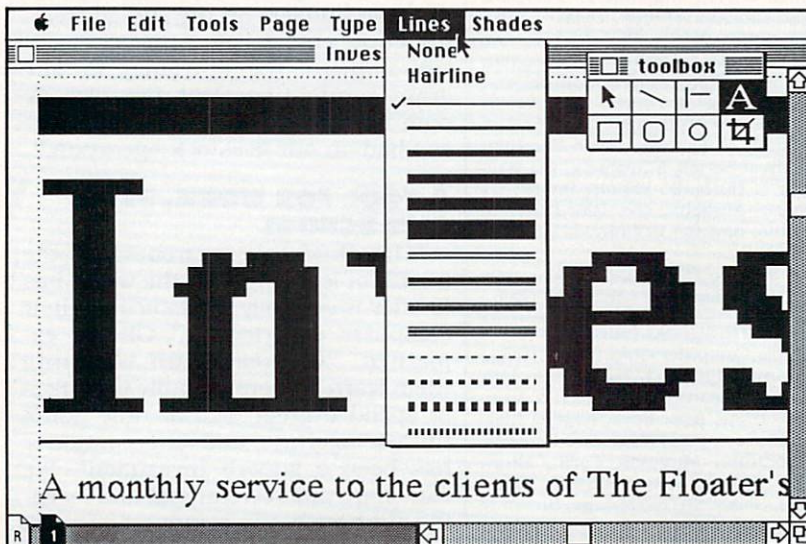


Page-layout software (Aldus' *PageMaker* is shown here), starts you out with a blank page. Using the text-entry mode, you can enter a headline in a number of type sizes and styles.



Using the box- and line-drawing tools, we easily construct a bar graph. Each bar can be filled with a pattern or shade. Here, shaded boxes are in the foreground, and the center crossline is "sent" behind them.

By pointing the arrow (right), which is controlled by the mouse, at a piece of text, we can move it into place anywhere we like. The text was written with a word-processing program, and then moved into *PageMaker*.



Here's a close-up of our title, "Investor Notes," and a selection of lines we can use to design the page.

Desktop publishing gives you control of the total look of a publication, whether you do a Red Cross newsletter or annual reports. Desktop publishing is word processing propelled into the space age. You can create large headlines, use multiple columns, draw vertical lines, and add drawings, charts, and photos. Now your documents can look much like those of a major publishing company. The real power of the press has arrived!

Why should you be interested in desktop publishing? It could make you some money. Or it could make you a hero at the office.

I work for a major corporation. One of the Fortune 500 kind. At work, we put out lots of sales brochures, price lists, specification sheets, and other printed material. I introduced desktop publishing into my department last year. We spent about \$10,000 on a complete system, and we've already saved more money than it cost. And I didn't learn the ins and outs of desktop publishing at the office. I did it at home.

DESKTOP APPLICATIONS

There are also many ways to use desktop publishing to start or enhance your own business. You can start a super word-processing business and deliver lots of "extras" for your customers. It'll be worth getting a small bank loan to set yourself up. You'll get repeat business because of the excellent quality and variety of your documents.

You may also want to consider starting a document-design business. Talk to a few local print shops first to see whether their customers could use a low-cost service for form and document design and layout. Business forms and contracts and many other documents will look professional when designed with page-layout software and printed out on a laser printer—the two key tools used by desktop publishers.

Or use some of your expertise to turn out a

DESIGN AND PRINT PROFESSIONAL-LOOKING DOCUMENTS WITH YOUR COMPUTER BY ROGER HART

newsletter on coin collecting or whatever your interest happens to be.

EQUIPMENT

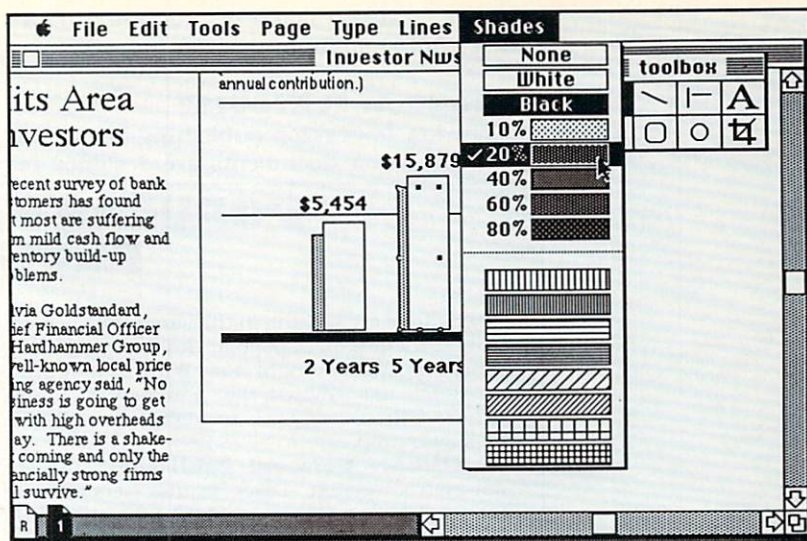
Right now, the Apple Macintosh, with its excellent graphics capability and uniform file structures and handling, runs the most and the best desktop publishing software. That doesn't mean that the IBM PC and its MS-DOS cousins will be left out forever. There are full-featured page layout programs currently under development for these machines. One package, *ClickArt Personal Publisher* (T/Maker), is already on dealers' shelves. But, for now, the Macintosh is the leader with three professional, yet easy-to-use, page layout programs—*PageMaker* (Aldus), *MacPublisher II* (Boston Software), and *ReadySetGo* (Manhattan Graphics).

A popular but much less extensive layout program is *The Newsroom* (Springboard). Springboard also publishes a collection of graphic designs on disk. These "clip-art" disks are very popular with desktop publishers, especially those with limited artistic ability.

Each program supports dot-matrix printers, which is fine for casual use like putting together a hobby club or church bulletin. But many businesses demand a high quality. To achieve professional desktop publishing results, you need a laser printer. These printers turn out copies that look almost as good as professional typesetting. (See "Buyer's Guide to the New Printers" in this issue.)

Laser printers cost a fortune, you say. True, they are expensive—ranging anywhere from \$2,000 to \$6,000. But, individual users can and do join together to purchase a laser printer to share. Or most economical of all, a number of new services provide laser printing of your computer files (see box). All you have to do is send a disk.

Once you have a laser printout, you can use an office copier to actually "publish" your



A close-up of the bar graph, and a selection of the shading patterns we can use to accent the bars. Again, changing the look of the page is a matter of clicking the mouse.

Investor

A monthly service to the clients of The Floater's and Kiter's National Bank

NOTES

!!

Economic Slowdown Hits Area Investors

A recent survey of bank customers has found that most are suffering from mild cash flow and inventory build-up problems.

Sylvia Goldstandard, Chief Financial Officer of Hardhammer Group, a well-known local price fixing agency said, "No business is going to get by with high overheads today. There is a shake-out coming and only the financially strong firms will survive."

See your F&K account representative for help in handling cash flow.

Your IRA's Future Value

(Based on a \$2,000 annual contribution.)

2 Years 5 Years 7 Years

IRA Rates at All-Time High

There's never been a better time for you to invest in F&K's IRA program. Top interest rates are paid and you get that ever-lovin' service that Floater's & Kiter's is known for.

Check your investment package today. You may be missing out on the biggest opportunity in many, many years.

Your friendly IRA representative will help you get the best interest rates available to you anywhere.

Don't let grass grow under your feet. Growing feet gather no moss.

Your Present Financial Needs

Your Annual Taxable Income

Sound Business Planning and Financial Advice From F&K

Presto! The final product, after being printed out on an Apple LaserWriter. Notice that the "computery" look of the text from the screen displays is now smooth and professional looking. The chart at the bottom was made with MacDraw, moved into PageMaker, and positioned with the mouse.

To reproduce this page, you could use an office copier, or give it to a printshop for offset printing.

creation. Or, to get better results, you can give it to a print shop for offset printing.

LOOKING AT "LAYOUTS"

The key to desktop publishing lies in understanding how documents are designed for

printing. As you get into desktop publishing, you'll begin to look at magazines, newspapers, books, and newsletters with a more critical eye. You'll become more aware of the design and composition.

Start your study right now with this issue

POPULAR PAGE-LAYOUT PROGRAMS

New entries are waiting in the wings, but here's a look at the five most popular desktop publishing programs available right now. With each of these programs, it's advised that you have two disk drives. Otherwise, you'll be doing considerable disk swapping.

ClickArt Personal Publisher (\$185 for dot-matrix version. Laser printer versions are \$335.) T/Maker Company (415) 962-0195. IBM PC or compatible w/512K RAM, graphics adapter, and two disk drives. A mouse is recommended.

Personal Publisher is not as powerful as the Macintosh desktop programs, but it has some good features. Its "snapshot" feature, for instance, allows any graphic screen image—from any program—to be placed within your page layout. It also will read Macintosh *MacPaint* files that have been downloaded to your IBM PC. This latter task isn't as simple as it sounds, but it can be done if you want to spend the money on communications software and modems. *Publisher* will also accept graphics from Mouse System's *PC Paint* program. All the graphics input will look like a typical dot-matrix printout, even when you use a laser printer for output. Up to four columns can be put on a page and documents up to 99 pages long can be created. The page, as seen on the screen, is an accurate representation of the printout.

Two laser-printer versions are sold. One uses the Hewlett-Packard LaserJet or LaserJet Plus, and allows your publication to have the fonts and sizes that are present in the printer's font cartridge. The other prints from Apple's LaserWriter and will be able to use all of that printer's fonts.

MacPublisher II (\$195) Boston Software Publishers, (617) 267-4747. Macintosh, Macintosh Plus.

MacPublisher can run on a 128K Macintosh, but it's sluggish, won't let you create very large publications, and won't perform to full capacity. You'll be much better off with 512K. However, there are a lot of features crammed into the program: kerning, the ability to move characters closer to or farther from each other; support for color printing on the ImageWriter II; a large number of keyboard commands in addition to the usual menu choices; a graphics palette with 99 designs and 10 gray scales; a built-in telecommunications program for sending and receiving files; a REPLACE mode to substitute new stories for those in the last issue, so you don't have to redo the same layout format.

MacPublisher II is particularly useful if you plan on using Apple's ImageWriter printer to produce masters. You can lay out the document in double size, and then print at a 50% reduction, getting a better-quality printout than normal. The LaserWriter and Allied Linotronic typesetters are also supported. A tutorial disk and very thorough manual are welcome additions.

MacPublisher is copy protected but can be installed on a hard-disk drive. An IBM version is being developed.

PageMaker (\$495), Aldus Corporation, (206) 622-5500. 512K Macintosh or Macintosh Plus; two disk drives.

PageMaker is high-powered, easy to learn and use, and has helped to sell a lot of Macintoshes to large corporations. It works just like a graphic designer, even down to the drafting board. If training time means money, this program is worth the price. The output is optimized for the Apple LaserWriter and can easily be produced in ultra-high quality through a typesetter. A toolbox is available at all times to assist in adding lines, boxes, circles, and ovals in a wide variety of styles, widths, and fill patterns. These may be changed quickly and easily if you want to see how other patterns, sizes, and styles look.

At this stage, *PageMaker* has the most friendly approach to designing pages and contains most of the features that a graphic designer would want. Future updates are expected to include kerning and a hyphenation routine.

PageMaker is copy protected. An IBM-version of *PageMaker* is being developed.

ReadySetGo 2.1 (\$195), Manhattan Graphics, (212) 989-6442. 512K Macintosh or Macintosh Plus.

ReadySetGo has a lot of professional features, including the ability to retrieve graphics and text from other Macintosh programs. Borders and filled-in blocks are easy to produce. Four gray patterns are available for filling blocks, frames, circles, and ovals. Overall, *ReadySetGo* is relatively easy to learn and use and produces good-quality documents on the Apple Image Writer and excellent quality on the Apple LaserWriter printer. The manual's index is brief and offers help with the more sophisticated areas like using graphic scanners or sending files to typesetters.

Also undocumented but good to know, *ReadySetGo* will work with Toshiba's new 24-pin printers, the P351, P341, and P321, when used with *ToshStart* printer driver software for the Macintosh (\$45 from SoftStyle [808] 396-6368). *ReadySetGo* is not copy protected, and registered owners have free access to a user help line for technical questions.

The Newsroom (\$60; \$50 for Commodore version), Springboard Software, Inc., (612) 944-3915. 64K Apple II+, IIe, IIC; IBM PC; Commodore 64/128.

Designed primarily for school, club, or casual home use, *The Newsroom* can be used for informal business newsletters. You'll find that it's best to place drawings first, then text. Reversing this could cause the loss of some text. You can crop graphics to fit, but enlarging or shrinking them isn't possible. *The Newsroom* uses dot-matrix printers, giving final copies a choppy and somewhat crude dot-matrix look. However, using a 24-pin printer should produce better results.

A built-in communications program allows you to transfer data to and from other computers. A disk of clip art is included. Two additional clip-art disks are also available from Springboard. Volume 1 contains 600 pieces of general art, while Volume 2 adds 800 pieces of business-oriented art.

The Newsroom Pro (\$130), an advanced version for the 256K IBM PC, is expected this fall.

"MY COMPANY SPENT ABOUT \$10,000 ON A COMPLETE SYSTEM, AND WE'VE ALREADY SAVED MORE MONEY THAN IT COST. AND I DIDN'T LEARN THE INS AND OUTS OF DESKTOP PUBLISHING AT THE OFFICE. I DID IT AT HOME."

Contributing editor ROGER HART, who lives in New Hampshire with his family, is manager of market development for a major chemical firm. He is a senior member of the Society For Technical Communication and has won four writing awards from the organization. He also wrote "Buyer's Guide to the New Printers" in this issue.

of FAMILY COMPUTING. Note that some articles are in two-column format; others in three. Vertical rules are used in some articles. Lined boxes surround some text. Reverse type is sometimes used for titles and other text elements for emphasis, and italic typestyles are often used to describe authors or software titles.

Also note the use of sidebars—small, individual stories that relate to the main article. These are used to help break up the text and to highlight those interesting sidelights that we all enjoy.

Starting to think like a layout designer and editor instead of just a reader is your first and most important step into the new world of desktop publishing.

PUBLISHING, THE OLD WAY

The second step to becoming a desktop publisher is to get a feel for the traditional way that newsletters, magazines, brochures, and other publications have been put together. First comes the basic design—how many columns, how wide, how many graphic elements will be included, how large are they, and where are they to be placed?

Then, the stories and text elements are estimated for length, edited, and sent out to a typesetter. Typestyles and sizes are specified. It's expensive to change your mind beyond this point. It means new typesetting charges and a new delay. When the final edited copy comes back from the typesetter in reproduction-quality form, each element—text blocks, headlines, etc.—is pasted on a layout board with rubber cement. Why rubber cement? It aids the removal and replacement of text, drawings, and photos, if needed.

Art is prepared to fit the space allotted. Borders, lines, and rules are added. Photos and drawings are cropped to eliminate unwanted portions and then enlarged or reduced photographically to the right size. After a final proofreading, the approval for printing takes place.

PUBLISHING, ELECTRONIC STYLE

Now, what if you could do all this just by closing your eyes and imagining the layout? Shrinking a photo in your mind to fit the right space? Trying various typestyles until you got a look that you like? Moving columns of text around and watching them "flow" from one column or page to the other? Then, when it was just the way you wanted it, you could say, "Make me a copy of that."

Desktop publishing isn't quite that effortless, but it does turn your computer into a flexible "paste-up" board—if you get the right software.

Several kinds of software help format documents and may be sold as "desktop publishing" software. You already know about word-processing software. Printer enhancement software provides extra typefaces and other goodies that the printer manufacturers left

out. Typesetting software inserts special codes in your documents to tell a typesetting machine what to do. New hybrid programs combine a word processor with print-enhancement software. For instance, *SC Laserplus* (\$495 for IBM PC), from Graham Software ([416] 591-9131), lets you format text and graphics using plain English commands embedded in the document—but you don't see the page in its true form until it emerges from the printer.

Finally, there's page-layout software that allows you to move elements around the screen at will and gives you a full preview of the final printout. That's what desktop publishing is all about.

PAGE-LAYOUT SOFTWARE

With page-layout software, you have complete control over every element on the page—placement and thickness of lines and borders, selection of typestyles and sizes, position of graphics and photos, and many other possibilities. And you'll see on the screen just what will print out in final form. It's "WYSIWYG," or "what you see is what you get." You watch every operation during the creation of your publication.

Page-layout programs allow you to put text into columns and link them together from one page to another. Most of these programs can open your word-processing and graphics programs and bring files into the layout for placement within the page design. Graphics can be moved about, stretched, cropped, or trimmed to fit the exact space you've allotted. Text can be enhanced by changing typestyles and sizes or by curving it around a graphic. Backgrounds of varying shades of gray can be added and text placed on top in either black or white for emphasis.

You can even use a graphic scanner to read pictures into your computer; then place them in your publication. Most scanners are fairly expensive, but some, like *Thunderscan* for the Macintosh, are priced reasonably enough (\$229).

Add captions to your graphic or beneath the spaces where you'll later paste on a photo. Use italics to make them stand out better, if you wish. You're beginning to see the power of page-layout software.

WHERE DO YOU FIT?

What's in desktop publishing for you? It depends on your sense of daring and basic business acumen.

Buy *The Newsroom* and have a lot of enjoyment at home with small-scale publishing projects. Or get a high-level page layout program. Learn it, and take your knowledge to the office, or put yourself into a new and exciting design business. Whatever you do, you can do it without an art degree, a pasteup board, a jar of rubber cement, X-acto knives, or a photo-cropping machine.

And you can do it right from home. ☐

PLACES THAT WILL PRINT YOUR PUBLICATION

A small, but growing number of firms around the country will accept disks by mail and print your files out on an Apple LaserWriter or a full-fledged typesetting machine. The general cost is \$1 per page for a LaserWriter printout and \$6 to \$12 per page for a typeset printout. The typeset version will be of higher quality. You can also send files by modem to some firms.

In addition, many Apple dealers that sell LaserWriters will rent time on them. Check dealers in your area for more details.

KEY

- [1] Apple LaserWriter
- [2] Typesetting

Alphabet Soup, 2822 Van Ness Ave., San Francisco, CA 94109 (415) 885-3156, [1], [2]

Aptos Post Typography (Mac Typesetting Club), 8058 Valencia St., Aptos, CA 95003, (408) 688-7474 [2]

Belisle Interactive Systems, Inc., Suite 306-307 Masonic Bldg., P.O. Box 1272, Lima, OH 45802, (419) 227-7277 or (800) 824-6394, [1]

Graphic Arts Associates, 575 Hope St., Stamford, CT 06907, (203) 348-9197, [1], [2]

ImageSet, 555 19th St., 2nd Floor, San Francisco, CA 94107, (415) 626-8366, [2]

Intergraphics, Inc., 106A S. Columbus St., Alexandria, VA 22314, (800) 368-3342, [2]

Krishna Copy Center, 2501 Telegraph Ave., Berkeley, CA 94704, (415) 540-5959 [1], [2]

Laser Printing Services, 2605 W. 12 Mile Rd., Southfield, MI 48034 (313) 356-1004 [1], [2]

Mac Typography, 702 Twinbrook Pkwy., Rockville, MD 20851, (301) 424-3942, [1]

MacTypeNet, P.O. Box 52188, Livonia, MI 48152, (313) 477-2733, [1], [2]

Spectrum Arts, Ltd., 1823 Eutaw Place, Baltimore, MD 21217, (301) 452-6900 [1], [2]

Typesetting Service Corp., 50 Clifford St., Providence, RI 02903, (401) 421-2264, [2]

Typeline, 170 State Street, Teaneck, NJ 07666, (201) 837-9839, [2]

BUYER'S GUIDE TO THE NEW PRINTERS

BY ROGER HART

WITH LASERS AND 24-PIN DOT-MATRIX PRINTERS LEADING THE CHARGE, THE OLD "DOTTY" PRINTOUT IS DISAPPEARING

New computers keep coming on the scene and grabbing attention. But advances in technology also keep improving the computer's most common add-on, the printer. In fact, Apple now calls the LaserWriter Plus (\$6,798), a laser printer, its "most powerful computer."

Familiar printer technology like the impact dot-matrix and thermal techniques are being developed in new ways, bringing new life to these old standbys. And at last, printer manufacturers are taking some of the frustration out of using their wares. Hooking printers to computers and taking advantage of some of their features is easier than ever.

Add to this a totally new kind of printer, the laser printer. This marvel is creating an entirely new application for computer users—desktop publishing. You design layouts with text and graphics on the computer and print out the final "master"—ready to be published—on a laser printer. (See "Desktop Publishing" in this issue.)

Here's a quick rundown of developments in thermal transfer, dot-matrix, and laser printers—the most active printer categories.

THERMAL-TRANSFER PRINTERS

Thermal printers were popular a few years ago because they were quiet and relatively inexpensive. Now, the technology has changed, and they are popular for another reason—print quality.

Unlike the pure thermal models, which relied on heat to draw ink out of special paper, thermal transfer printers use regular paper and melt ink from a ribbon onto paper. The ink bonds to the paper when heated.

The waxy ink spreads the dots slightly to achieve greater uniformity and smoothness. The results are almost as good as those of a daisywheel, letter-quality printer, particularly with the newest high-density models, which have a 24-pin printhead (older printers use a 9-pin printhead). Among the 24-pin thermal transfer printers are the IBM PC Convertible printer (\$295), the Apple Scribe (\$249), and the Okimate 20 (\$268).

The Apple Scribe (for Apple IIc, IIe, and Macintosh) and Okimate 20 (for Commodore 64/128, Amiga, Atari ST, IBM PC, and Apple IIe and IIc) are also capable of full-color printing. These printers are easily the least expensive color printers around. A simple ribbon change will bring you color printouts.

The main drawback to thermal transfer printers is that they use a lot of ribbons. At around \$7 each, the cost will add up. A standard black ribbon will deliver about 40 pages of text or graphics; a color ribbon will deliver about

10 pages. This aside, thermal transfer printers bring good-quality, inexpensive printing, even in color, to the average home user.

9-PIN DOT-MATRIX PRINTERS

There's a lot going on with the familiar impact dot-matrix printer. Older printers, with nine-pin printheads, are becoming great bargains, selling in the \$200 to \$300 range, half what they cost a few years ago. While the print quality has not improved much, today's improved nine-pin printers are faster, more versatile, and easier to use. And some offer color options.

Front-panel control is a major development that makes printers much easier to use. Instead of hiding tiny control switches deep down inside the machine, newer printers can be controlled from the front panel. The new Star Micronics NX-10 (\$349) and Gemini II (\$329) for Commodore give you front-panel control of many print-format functions, including three print-pitch selections, type style, print mode, margin settings, and forward and reverse paper feed. The Okidata 192 (\$499–\$578) and the Apple ImageWriter II (\$595) allow you to select different print styles (correspondence, draft, etc.) directly from the front panel, by pressing a button.

Many new printers also feature better paper handling. The IBM Proprinter (\$549) has a front slot for envelopes. This puts an end to the difficulty of printing envelopes, long a computer user's lament. Almost all of today's printers have rear tractor-feed mechanisms. This allows you to securely snap the paper in place before spinning it around the platen (and ripping it to shreds!).

Finally, a number of 9-pin printers can print in color when outfitted with a color ribbon. These include the Apple ImageWriter II, Epson JX-80 (\$399), Juki 5510 (\$648–\$731), and C. Itoh 8510 (\$649).

24-PIN DOT-MATRIX PRINTERS

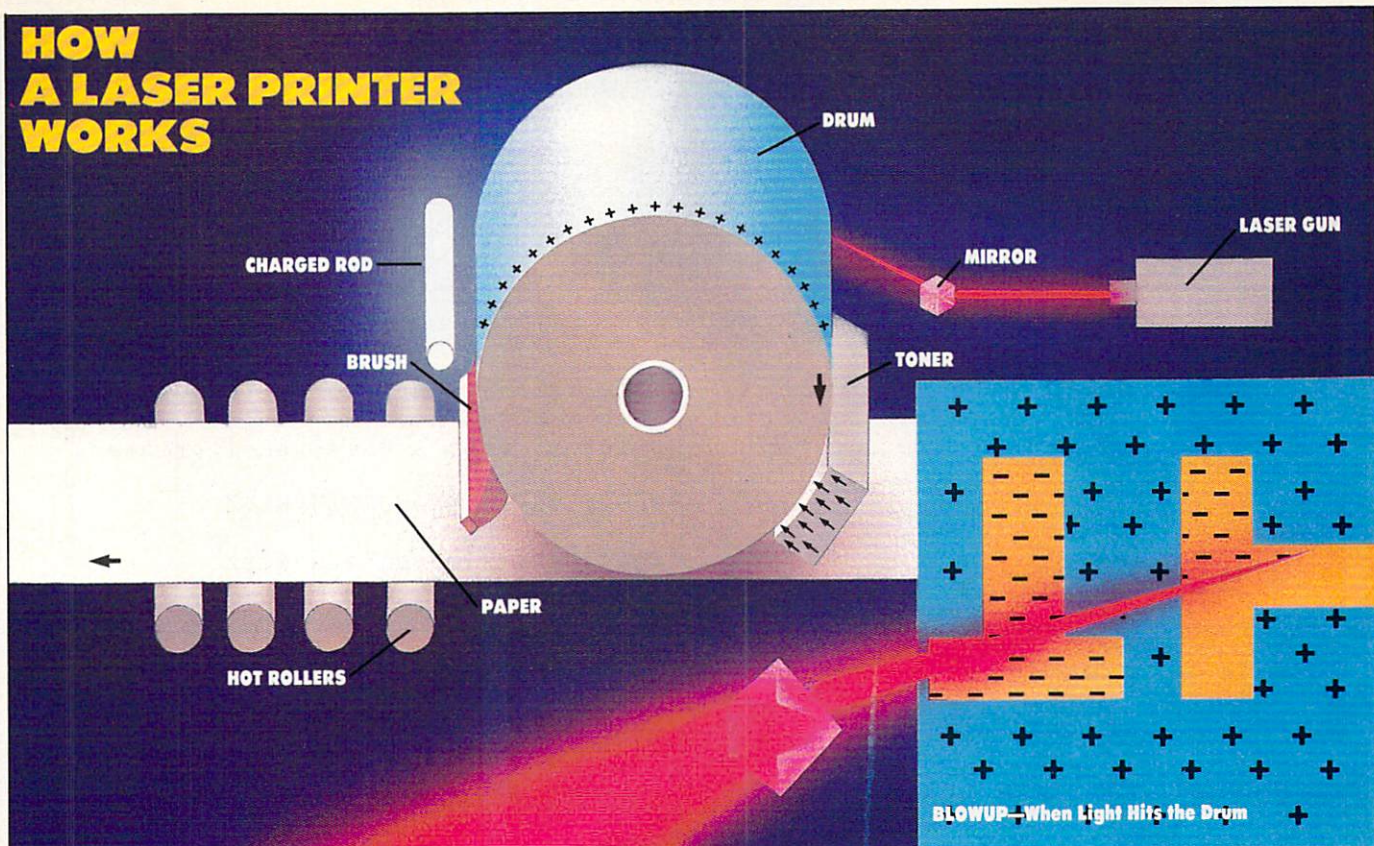
But none of these bells and whistles are as significant as an improvement in the design of the dot-matrix printhead itself. In some models, the nine-pin design has been doubled to produce 18-pin models. The rows of pins are slightly offset to allow a better fill of the character image and to provide "near letter-quality" printing in a single pass of the printhead. These 18-pin printers, such as the Okidata Microline 292 (\$899), are generally compatible with software that runs a nine-wire dot-matrix printer.

However, even higher print densities are available from the new 24-pin printers. If you're upgrading from an older 9-pin model, look at some sample printouts from 24-pin printers. You'd think you were looking at a letter-quality printout.

Some 24-pin models, such as the Epson LQ-800, have

Contributing editor ROGER HART also wrote the "Desktop Publishing" feature in this issue.

HOW A LASER PRINTER WORKS



1. **DRUM**—The rotating drum inside the laser printer starts out with a positive electrical charge.
2. **LASER GUN**—The gun shoots a laser beam of light at the mirror.
3. **MIRROR**—The multi-faceted mirror directs the laser beam to the appropriate spots on the drum, which leaves a negative electrical charge where letters or graphic images are to be formed (see "blowup").
4. **TONER**—As the drum rotates, positively charged black toner powder sticks to those areas on the drum with a negative charge.
5. **PAPER**—As the drum moves over the paper, black toner is attracted to the paper, which has a stronger charge than the drum.

6. **HOT ROLLERS**—As the paper moves across the rollers, the toner is "burned" into the paper.
7. **BRUSH**—The brush wipes excess toner from the surface of the drum.
8. **CHARGED ROD**—The rod (in some cases a grid of wires) carries a high-voltage positive charge, which creates a halo known as the "corona effect." This positive charge wipes out the negative charge on the drum, leaving it clean to restart the whole process.
9. **BLOWUP**—The surface of the drum carries a positive charge, but the energy from laser light has left a negative charge to create the word "THE." Here you see the "T" and half of the "H."

even dropped the "near" from "near letter-quality," implying that their output is as good as that of the daisy-wheels. NEC's P560 (\$1,495) and Toshiba's P351/P341/P321 series (\$699 to \$1,599) can even approach the dot density of laser printers, though the final output is not nearly as sharp.

These 24-pin printers carry the added benefit of printing quite fast. Most can print a draft copy faster than 200 cps (characters per second). That combines quality and speed in a single printer. Of course, like all dot-matrix printers, they can print out detailed graphics.

High-density 24-pin printers range in price from about \$650 to \$1,500, though you can find better prices through mail order. At the low end of the scale are Toshiba's P321 (\$699) and Epson's LQ-800 (\$799). At the upper end is the Star Micronics NB-15 (\$1,449), which prints at 300 cps. Prices for these newest high-density models may rise if the American dollar continues its decline against Japanese currency. Prices on older 9-pin models, of course, are likely to continue falling.

LASER PRINTERS

Laser printers are the talk of the town. They're really taking over for office printing. The high-tech term "laser," however, hints at the cost. Laser printers start at around \$2,000, but the quality of their type is worth the price to many users.

Essentially, a laser printer is a dot-matrix printer. It forms characters and graphics with tiny black dots. The

difference is that laser printers use many more dots—90,000 per square inch, compared to 20,000 or 30,000 with a standard 9-pin, dot-matrix printer. This higher density translates directly into print quality, especially on small type sizes. The edges of larger type—headlines on your newsletter, for instance—won't look as smooth.

While the Apple LaserWriter (\$5,999) and other more expensive laser printers can print in a variety of type styles, the low-cost laser printers (around \$2,000) use plug-in font cartridges to change typestyles. Most come with a font called "Courier" that is designed to look like a standard typewriter. Other fonts will give a more "professionally printed" look. These low-end models print some graphics but the quality won't be any better than that given by most dot-matrix printers.

There's a reason for this: To print graphics, a laser printer requires a lot of memory. Most daisywheel and dot-matrix printers print one character after the other. The computer just feeds the printer one character at a time. The printer doesn't need much memory (though some printers have 8K buffers that hold three or four pages at a time), because the printer depends on the computer's memory to store data.

Laser printers, however, receive an entire page before beginning a printing sequence. (Thus, they're often called "page printers.") Most lasers print about eight pages per minute.) To print text, you don't need that much memory. But if you want to print graphics, memory requirements shoot skyward.



This is an example of a printout from a 9-pin dot-matrix printer.

ABCDEFGHIJKLMNPOQRSTUVWXYZ

abcdefghijklmnpqrstuvwxyz

This is an example of a letter-quality printout from a daisywheel printer.

ABCDEFGHIJKLMNPOQRSTUVWXYZ

abcdefghijklmnpqrstuvwxyz

This is an example of a printout from a 24-pin dot-matrix printer.

ABCDEFGHIJKLMNPOQRSTUVWXYZ

abcdefghijklmnpqrstuvwxyz

This is an example of a printout from a laser printer.

ABCDEFGHIJKLMNPOQRSTUVWXYZ

abcdefghijklmnpqrstuvwxyz

At 90,000 dots per square inch, an entire page of graphics becomes 6.8 million dots! All this must be stored in the printer's memory before the printing process begins.

Memory is one reason why Apple's LaserWriter costs \$5,995 and QMS's K.I.S.S. ("Keep It Smart and Simple") sells for \$1,995. The LaserWriter has over 1,500K of RAM (random-access memory) while QMS' K.I.S.S. has just 128K.

There are other reasons, too, why some models, like the Apple LaserWriter, are more expensive. They contain a specially built raster image processor (RIP) to maintain precise control over the printing job. This is actually a very powerful computer on its own.

Apple's printer also contains a special language, PostScript, that exerts fine control over the printing process. PostScript allows you to fashion any size character you want—all the way up to one character per printed page! Typesetters printed on most other laser printers aren't quite as crisp and clean as they are when they emerge under PostScript's special font and page-handling techniques.

This new language, which is built into the LaserWriter and is "transparent" to the user, is especially suited for the newest computer application, desktop publishing.

Most page-layout software used for desktop publishing—even some IBM PC programs—is designed to create PostScript files for PostScript printers. Many typesetting machines, which print 1,250 or so dots per inch com-

pared with laser printers' 300 dots per inch, accept PostScript files.


So, laser printers in the \$2,000 range are primarily useful for text and have limited capabilities with graphics. The Hewlett-Packard LaserJet Plus (\$3,995) falls in the middle. It has a number of plug-in font modules and enough memory (512K) to do graphics, and an increasing number of desktop software packages are designed to drive it.

THE FUTURE

Will laser printers get cheaper? That's a question that everyone is asking. The answer is yes and no—to judge from most trade sources.

Low-end laser printers won't get much cheaper. You're not likely to see one much under \$1,500 for quite a few years. But, you should get more features for your money as time goes on. You'll probably see greater memory for printing graphics and enhanced ability to do complex page printing; also look for the incorporation of the PostScript language for easy desktop publishing use. The high-end models will come down some in price in the future. Color? Don't expect it for a year or two. Even then, the colors won't be any better than what a color photocopy machine produces.

A more exciting development will be higher resolution and print quality from laser printers. Expect to see lasers that print 600 dots per inch—double the quality of today's models. That still won't be quite the quality of professional (and expensive) typesetting—which is 1,200 dots per inch and up—but close enough for almost all business work. These will be low-grade typesetters on a desktop.

With all these new developments in the printer field, it might be wise to take a good, hard look at the printer you're using. Perhaps it's time for a change for the better. You've never had more choices. 

MANUFACTURERS' PHONE NUMBERS

Apple Computer, Inc. (408) 996-1010; C. Itoh Digital Products (213) 327-5939; Epson America, Inc. (203) 377-7171; Hewlett-Packard (408) 293-2444; IBM (305) 272-2662; Juki (800) 521-9846; (213) 320-4860; NEC (617) 264-8635; Okidata (609) 235-2600; Star Micronics (212) 986-6770; Toshiba (714) 730-5000

Back-To-School Computing

NOW'S THE TIME TO GET YOUR COMPUTER INVOLVED WITH YOUR CHILDREN'S SCHOOL WORK

If you're a tailor who plans to make a dress, you can use a needle and thread from your sewing box. Or you can save time and sew stronger seams with a sewing machine.

If you're a suburban home owner who has hedges that need trimming, you can use shears. Or you can save time and energy with electric hedge clippers.

If you're a parent whose children are starting the new school year, you can gather up pencils and paper. Or your family can use a computer to save time—and end up with neater, more accurate work.

Like a sewing machine and electric hedge clippers, a computer is a tool to help you do things easier and faster. There are thousands of educational programs on the market that can help your children do everything from learning multiplication tables to studying for the Scholastic Aptitude Test (SAT). You and your school-age children can also use your computer this month to organize for school, make studying more fun, and make school projects easier. It might even motivate or inspire your children to work harder. And there's no better time than September to start some motivation and inspiration.

BACK TO SCHOOL WITH THE DUQUINS

For instance, last September we received a note from our son's second-grade teacher: Dear Parents:

Please encourage your child to read books in his or her free time. As an incentive, when a child finishes 20 books, I'll provide a certificate and a sticker. Please have your child record on the enclosed sheet the title and author of each book he or she finishes. Thank you for your cooperation.

ILLUSTRATIONS BY MONA MARK

MON

Big Geography Exam
Research Paper Due



TUE

All-Day Class Trip!!!



BY LORENE HANLEY DUQUIN

"It's never going to work," I said to my husband, Dick. "Tommy will never keep track of the books he reads or else he'll lose the list long before he gets to 20 books. Then he'll get frustrated and won't want to read anymore, and then . . ."

"Wait," Dick said. "I have a great idea. We'll let the computer encourage Tom to read!"

That evening, Dick and Tommy set up an electronic spreadsheet with the following headings:

#	DATE	BOOK	AUTHOR	#	PAGES	RATING
---	------	------	--------	---	-------	--------

Dick explained to Tommy that, instead of keeping a handwritten log of completed books, he could enter the information into the computer. That way Tommy wouldn't have to worry about misplacing the list. When he finished reading 20 books, he could print out a list and take it to school. But those weren't the only advantages the computer offered.

Tommy could have the computer sort and rearrange his list in several ways. He could get a chronological listing based on when he read each book. He could have an alphabetical listing of books by author and see at a glance how many books he had read by Beverly Cleary, Margery Facklam, etc. The spreadsheet also had a totaling function, so any time he wanted to, Tommy could get a count of how many books and how many pages he'd read to date.

In addition, Dick included a category allowing Tom to rate each book with an E (excellent), G (good), S (so-so), and T (terrible). With the sorting function on the spreadsheet, the computer could rearrange the books in the order Tommy rated them, from best to worst.

The idea worked. Last year, Tommy read over 100 books in his free time and he plans to

LORENE HANLEY DUQUIN wrote "Make Your Computer One of the Team" in the July issue of FAMILY COMPUTING.

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YOU AND YOUR CHILDREN CAN USE YOUR COMPUTER THIS MONTH TO ORGANIZE FOR SCHOOL, MAKE STUDYING MORE FUN, AND MAKE SCHOOL PROJECTS EASIER.

continue his list. His goal is 1,000 books. (If you don't have spreadsheet software, you can use a filing or data-base program to implement this idea.)

We also tried out an idea last year with our 5-year-old daughter, Betsy, who was learning how to read. When she started school in September, her teacher told us that each week Betsy would be returning home from school with new words printed on index cards. A question immediately popped into our heads: "How could the computer help Betsy learn to read and write better?"

The answer was to save Betsy's words on a disk with our word-processing program. Betsy was able to see her words on the screen. She could rearrange them into sentences. Each time she retyped a word, entered a new word, or moved any of the words around, she reinforced those words in her mind. She also became familiar with the computer keyboard. But best of all, Betsy enjoyed doing it.

BACK TO SCHOOL WITH YOUR FAMILY

You and your school-age children can prepare your computer this month for a host of school activities. To come up with ideas, think about your children's needs in relation to the capabilities of your software library. In our home, we use a word processor, a spreadsheet, a data base, a graphics program, and communications software. Most kids won't make the connection between school work and how the computer can help them. They'll be too busy worrying about making new friends, getting the best teachers, and finding their lockers. So while they're worrying about these back-to-school problems, you can find some back-to-school solutions. Here are some ideas:

BACK-TO-SCHOOL ORGANIZATION

Will any of your children be changing classes this year? Organize class schedules on a spreadsheet, data base, or word processor, complete with class times, teacher names, and room numbers. Then print out the schedules and tape the printouts into your children's notebooks. This format might work for them:

PERIOD	TIME	CLASS	TEACHER	ROOM #
1				
2				
3				
4				
5				
6				
7				

If you have a child who has trouble meeting deadlines or remembering assignments, he or she can use a computer to help with organization. With a word-processing, spreadsheet, or data-base program, you and your child can design a weekly calendar format that looks something like this:

THE WEEK OF:

MONDAY

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

If your children save a weekly form on a computer disk, every Sunday evening they can print out a new schedule for the following week and keep it in their notebooks for writing down assignments.

BACK-TO-SCHOOL ERROR-CHECKING

Your children can use your computer to create a checklist of common errors. For example, you might want to encourage a child to prepare a list of words that he or she frequently misspells or common grammatical and usage errors. The checklist could even be a series of questions such as: *Did you remember to end each sentence with a period? Did you capitalize the first word of every sentence? Did you indent each paragraph?* Your kids can save the checklist on a disk and use it when proofreading homework, projects, or reports.

Have any of your children registered for a foreign-language class? As you probably know, learning the difference between *cuarto* and *cuatro* or *jaune* and *jeune* can be mind-boggling. Foreign-language students might want to use a data-base or word-processing program to check for spelling errors.

Show your children how they can use a spreadsheet (see *Home-School Connection in the July issue of FAMILY COMPUTING*) to help out with math class. If you have a child who hates to check word problems in algebra class, see if you can figure out how to set up the formulas on an electronic spreadsheet. Then your kids can just plug in the numbers and let the computer check the calculations.

BACK-TO-SCHOOL STUDY HABITS

Take the time this month to show your kids how they can create neat, condensed study sheets using a data base. For children who have a hard time learning definitions, this practice can be especially helpful. For example, a biology student who has to learn the parts of the body and classify them by body system can use a data base to study. The information can be formatted into columns, lists, and charts. It can also be rearranged alphabetically or classified by system.

Now's the time to find out which families in your children's classes own modems. Your child can use a modem to study with a friend who also has a computer. Encourage your children to quiz their friends by typing in questions and answers. However, remember that this may jack up both your phone bill and your electronic-service charges.

■ If your children have to take comprehensive exams at the end of the semester or school year, they might want to get off on the right track now by starting to retype their class notes with a word-processing program. When it's time to study for finals, they can reorganize the material or use the word processor's FIND or SEARCH feature to help locate key dates or terms.

BACK-TO-SCHOOL FUN AND EXTRA CREDIT

■ Find out whether any of your children's teachers encourage extra-credit projects. If they do, your computer may be able to help your kids rake in some extra-credit points. For instance, your children can prepare a word search of new spelling words each week for their classmates in English class. There's a program in this month's The Programmer that will format a word search and an answer key. Or you can have your child design his or her own search with a word-processing program. The first step is to make a design with the words. For example:

```

b o y   c   d o g
a       a n d   e
d       t       t
o n e   b i g
i n

```

Now print a copy of the design to give to the teacher for an answer key. Then fill in the design with miscellaneous letters and print out a copy for each child in the class. The finished product should look like this:

```

q b o y w c e r d o g t
y a u i o a n d p l e k
a d s d f t g h j k t h
z x o n e c v b i g n m
q w e r t i n u i o p c

```

FIND THESE HIDDEN WORDS:

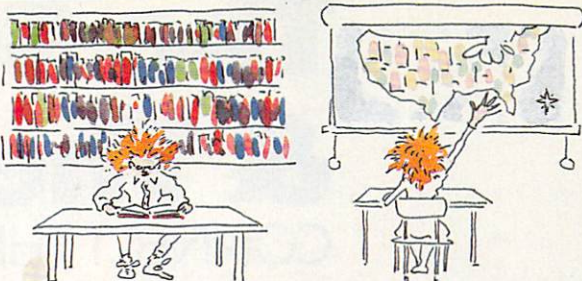
boy	cat	one
bad	in	big
dog	get	and

■ You can encourage a child who enjoys writing to start off the school year with a journal. He or she can compose the journal on your computer and store it on a disk. Make sure your child gets a personal disk that no one else touches—including you. You want your child to write this "diary" without fear that someone else will read it.

■ Are any of your kids planning to run for an office this year? Junior class president? Student council treasurer? If so, he or she can use a graphics program to create signs and posters that are sure to attract attention.

MON

.....
Big Geography
Exam
.....
Research Paper
Due



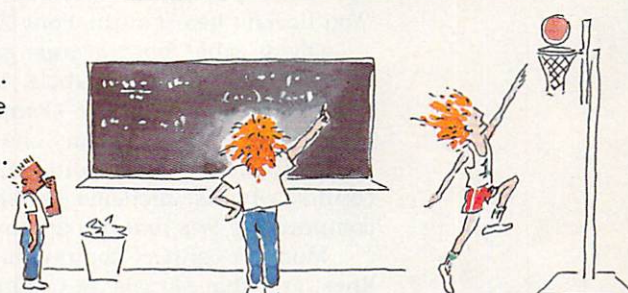
TUE

.....
All-Day Class
Trip!!!



WED

.....
Tutor Bernie
in Math
.....
Basketball
Game After
School



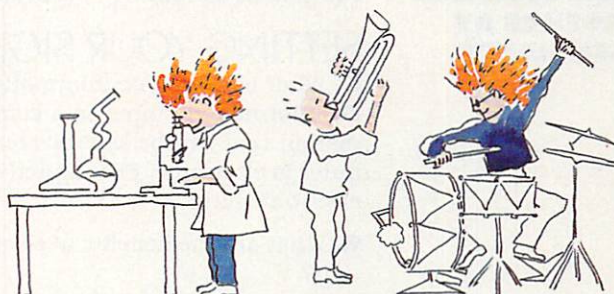
THU

.....
Cheerleading
Practice



FRI

.....
Lab Report
#2 Due
.....
Band
Rehearsal



■ If you or your children like to keep track of grades in order to calculate final averages, start doing this: Use a spreadsheet to store grades on tests, papers, oral reports, etc. from the first day of class. You or one of your kids can use the spreadsheet to calculate grade averages in a flash.

Whatever you do to help your children use the computer in their school work will be an investment in their future. You created a sound educational foundation for them when you purchased a computer. Now help your children build on that foundation. **FC**

The Computer & The Phone

CONNECT THESE TWO 20TH CENTURY DEVICES AND YOU'RE READY FOR THE 21ST

People who use computers to great advantage can't believe that other people don't use them. "It does this thing and that thing; I can't believe you're still using the laundry rack." Likewise, people who use modems usually think the same way about mere computer users. "You haven't heard of the Pony Express?"

Divide what both groups say by 50 percent, to account for hyperbole, and you're still left with this deduction: Computers change people's lives, and modems change computer users' lives. The stories of people around the country who use modems (*see the profiles accompanying this feature*) are proof of that.

Modems connect computers to the phone lines, and that signals an exponential change in the usefulness of your computer. Instead of trudging back and forth between disk drive and computer, data now zings wherever phone lines go. And that allows you to take action.

Write a letter—send it. See a deal—buy it. Look for an article—find it. Want a program—get it. Have modem—will travel!

So put one foot in the stirrup and let us boost you on-line by answering three basic questions: a) What can I do on-line? b) What equipment do I need? c) How do I get started?

SETTING YOUR SIGHTS

Q. What is electronic information?

A. Information stored in a computer or information that can be sent or received by a computer is electronic. Files stored on a disk are in electronic form.

Q. What are the benefits of electronic information?

A. Electronic information is immediate. Any letter that must go through the mail and any publication that must be printed is going to reach its target audience more slowly than electronic information.

The second advantage of electronic information is that it can be altered after it's received. You don't necessarily need a phone line to do this of course—you can just send a disk. But, you can send electronic information on one type of computer (e.g., an Apple) and receive it on another (e.g., an IBM), whereas you can't do that with a disk. For instance, you can send electronic information from your com-

puter at home to your office computer even if they aren't compatible.

Finally, electronic information is convenient. You don't have to physically "go get" electronic information; it comes to your home or office, via your computer. Depending on what kind of information you're after, this kind of portability may save you a lot of time and trouble.

Q. What equipment do I need to connect my computer to the phone lines?

A. In addition to your computer, you need a modem and communications software. The modem is connected to your computer by a cable, and the phone line plugs into the modem. Thus your computer is connected to the phone line. Communications software lets you dial the phone, send or receive files, and print out.

Q. What can I do once connected?

A. You can send electronic mail, pay your bills, buy stock, purchase airline tickets, research your thesis, play games, shop, meet people, and much, much more.



Les Eargle,
Center, Texas

Q. What is electronic mail?

A. Mail that is sent over the phone lines from one computer to another. The recipient, of course, generally has to look in his or her "electronic mailbox" to find the mail. However, some services will take a message sent by computer and deliver a paper printout to someone who does not have a computer. And on AT&T Mail, you can pick up the phone and receive an electronic mail message that has been stored in your mailbox. Western Union and MCI also have electronic mail services.

Q. What is home banking?

**TEXT BY
NICK SULLIVAN
PROFILES BY
JACK HAYES**

NICK SULLIVAN is senior editor of FAMILY COMPUTING. JACK HAYES, an ex-newspaperman and insurance underwriter in Atlanta, Georgia, frequently writes about computers

A. If you sign up with one of the home-banking services, now offered by major banks around the U.S., you can pay bills and transfer money between accounts—from your computer at home. But you can't get cash out of your computer. Because of this obstacle, home-banking to date has been most useful for the self-employed or small-business owners who have a lot of bank transactions but don't want to trudge to the bank.

Q. How can I use a modem to research my investments?

A. On CompuServe, Dow Jones News/Retrieval, and The Source, you can retrieve up-to-the-minute stock quotes, analysts' reports, and a wealth of corporate information. And you can buy and sell stocks through discount brokers. On Dow Jones News/Retrieval, you can read the full text of the *Wall Street Journal* and *Washington Post*. You can also read the Dow Jones news wire throughout the day—in effect, read the news the day before it's published.

Q. Can I do professional research?

A. Yes—you can tap into large bibliographic data bases to research virtually any topic, without going to a major library. In some cases, you get abstracts of books or articles; other times, you can get a "full-text" printout of an article.

If you call 1-(800) EASYNET on your modem and enter credit-card information, you'll be able to search over 700 specialized data bases. The same service is also available through CompuServe and Western Union's EasyLink.

Q. Why use a computer to get information I can get from a newspaper, television, radio, or library?

A. True, it doesn't make much sense to go on-line to read the AP wire or any of the other myriad news available via modem. Such news is an "extra" but not a reason in itself to go on-line.

There's no reason to use a modem unless you need one of the three advantages it offers—immediacy, flexibility, and convenience. But if you have one primary reason to use a

modem—for many, it's electronic mail—then the other services are all gravy.

Q. What's a SIG?

A. Special Interest Groups are not indigenous to electronic networks, as many user groups have SIGS. But most electronic networks do have SIGS, where people with common interests gather to talk, read messages, and get BASIC programs or articles.

Q. How can you "talk" or "meet" people via modem?

A. The biggest on-line meeting spot is CompuServe, which allows you to go into "conference." In conference, hundreds of people can talk at one time. Each user types a comment and hits RETURN, which sends it to everyone else who is signed on.

On-line conferences can be formal affairs, with special guests and featured speakers, or they can be free-form discussions that anyone can join. QuantumLink, for instance, offers regularly scheduled "forums" with special guests.

Q. Who are the primary users of modems?

A. Business people, whether in a corporate setting or running their own show, are the prime users. But individuals who do office work at home often send it to the office by modem. Professionals who need access to specialized data bases—engineers, lawyers, and professors—are heavy modem users. And increasingly, modems are being used in schools. For example, two schools in Hartford, Connecticut are set up to communicate with each other and with schools around the country, as part of a project sponsored by MCI Mail. Another example is in New Jersey, where several schools use modems to access news reports and encyclopedias on Dow Jones News/Retrieval.

EQUIPMENT

Q. What's the difference between 300-baud, 1200-baud, and 2400-baud modems?

A. The baud rate of a modem indicates how fast it will send and receive data. A 300-baud modem will send a little more than one double-spaced page per minute. A 1200-baud modem, four times faster, will do about four pages per minute, and a 2400-baud modem will send eight pages.

Q. How do I connect a modem to my computer?

A. Most modems are external devices that connect to your computer via the serial port. A standard 25-pin serial cable will make the connection on many computers; just make sure you get the proper combination of male and female connectors to fit your setup. Non-standard serial ports (Commodore 64/128, Apple IIc, Macintosh, and the Color Computer) require a special cable.

The IBM PC and compatibles and the Apple IIe can use internal modems—a circuit card that plugs into an expansion slot.

Elliot Entin,
Lexington, Massachusetts



Stephen Friant,
Pennsauken, New Jersey



Marianne Messersmith,
Perth Amboy, New Jersey

PHONE NUMBERS FOR ELECTRONIC SERVICES

Call these numbers (by voice) to request sign-up kits or pricing information on the services.

AT&T Mail	GEnie
(800) 367-7225;	(800) 638-9636;
CompuServe	MCI Mail
(800) 848-8199;	(800) MCI-2255;
Delphi	QuantumLink
(800) 544-4005;	(800) 392-8200;
Dow Jones	The Source
News/Retrieval	(800) 336-3366;
(800) 257-5114;	Western Union
EasyNet	EasyLink
(800) 841-9553;	(800) 247-1373.

Q. Does it make sense to buy a "Hayes-compatible" modem?

A. For most computer owners, yes. Since Hayes has become the standard that most modem manufacturers have followed, most communications software is designed to work with Hayes and Hayes-compatible modems.

However, Commodore owners are better off with a Commodore modem and Atari XE/XL owners with an Atari modem.

Q. How do I choose a modem?

A. If you can afford the initial cost, you'll probably save money over time with a 1200-baud instead of a 300-baud modem. A 2400-baud modem makes sense primarily for heavy business users. An auto-dial feature is handy. With the right software, auto-dial modems allow you to store phone numbers in memory and then dial them from the keyboard by pushing one key.

Don't buy a modem you've never heard of; it will probably work but might not be as reliable as a known brand name. You know how bad cheap phones can sound!

Q. What should I look for in communications software?

A. First, it should work with your computer and your modem—which is why buying a Hayes-compatible modem will save you some trouble. Second, it should allow you to turn your printer on and off while you're on-line. Third, it should be able to send a file from disk and save a file to disk. Fourth, it should have a "capture buffer" so you can store information you read on-line.

GET GOING

Q. How do I actually get on-line?

A. Your modem is connected to your computer, and the phone line is plugged into your modem. Your communications software is booted up. You have the phone number of a local "bulletin-board system," information service, or electronic mail service. You dial the phone number, usually from your computer keyboard. The phone rings, and then you hear a high-pitched tone on the other end. You've reached another computer. You're on-line!

Q. Where do I get these phone numbers?

A. For the big information and electronic mail services, you get a "start-up" kit, which has "access" phone numbers. You find these kits in computer stores or often included with modem and communications software packages. As a last resort (because the phone lines are usually busy), you call the service directly and ask them to send you a kit. The kit allows you to sign on, enter your billing information, and formally request an account.

Q. How do I figure out which network to join?

A. CompuServe, Delphi, GEnie, and The Source are all general-interest networks. They have a little of everything—shopping, banking,

games, SIGs, business and sports news, etc. However, CompuServe has by far the most subscribers, which makes it more active. Dow Jones News/Retrieval specializes in business information. QuantumLink is for Commodore users only.

But that's not going to help you decide. To do that, take the five free hours that you sometimes get when you buy a modem and try out the various services.

To choose an electronic mail service, find out which service the people you want to reach belong to. Then join the same one. The most active service is probably MCI Mail, which connects you to Dow Jones News/Retrieval. Also, MCI Mail users can send messages to CompuServe subscribers.

Q. How much do these services cost?

A. The rates vary widely. Generally, there's a sign-up fee to get an account number and a password, but it's often included as part of a software package. Beyond that, you pay by the hour—from \$3.60 an hour on QuantumLink and \$5 per hour on GEnie to \$12 an hour on Dow Jones News/Retrieval. These rates are for nights and weekends and are considerably higher during prime time (6 a.m.–6 p.m.). QuantumLink and GEnie have the same rates for 300- and 1200-baud users, while other networks charge more for 1200-baud usage.


Electronic mail services have a monthly or annual fee (\$25 per month on Western Union's EasyLink and \$18 per year on MCI Mail), plus a charge each time you send a piece of mail—generally \$1 for an average-size business letter.

Q. Is life worth living without a modem?

A. Put it this way: neither my 99-year-old grandmother nor my 84-year-old grandmother has a modem. And they're both fine. My 64-year-old father doesn't have a modem either, but he's got a telephone answering machine, and that's the first step. I think he's weakening. And me? If I didn't have a modem, I'd be up the creek without a paddle.

TELECOMPUTING IN ACTION

LES EARGLE, 56
CENTER, TEXAS

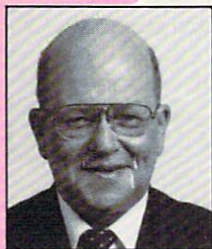
"They've got rare diseases listed on CompuServe," says Dr. Eargle, a GP for over 20 years. Eargle writes a quarterly newsletter on his IBM PC for his patients and gets most of his information via modem. He goes on-line to review medical abstracts, look up rare diseases, and search encyclopedia writings. His standard operating procedure is to find a data base allowing him to search for the proper subject/title and print out the names and issue dates of the appropriate medical journals. He then orders them from the Medical Association of Texas through a local library. "I don't have to leave my desk or run up a big expense," he explains. "When I go out of town, I order my tickets through CompuServe, too." 



Barry Pilger,
Berkeley, California

ELLIOT ENTIN, 46
LEXINGTON, MASSACHUSETTS

Not surprisingly, behavioral researcher Elliot Entin would rather work at home than spend late nights at the office. But his job requires conducting military research using vast amounts of information stored on large and powerful minicomputers at AlphaTech Corp. Entin certainly can't drop a DEC VAX minicomputer into his briefcase, and he can't store



Jim Ritschel,
St. Paul, Minnesota

even a fraction of his research data on a floppy disk. However, using a modem, Entin can sit in front of his Apple IIe at home to scan, analyze, and extract data that is kept on the minicomputers at work. "During peak periods, I might come home from work, eat dinner, and go solid from nine until one in the morning," says Entin. Entin, who has owned a modem since 1977, is also using telecommunications to do some free-lance research. He is able to log onto a system at a local school that will help analyze the results of a study he is conducting on risk-taking.

Entin's wife Eileen, a computer science teacher, is also blending modems and research. Eileen Entin logs onto a computer at her school, the Wentworth Institute of Technology. She uses the computer and modem to help run experiments and analyze data on the subject of readability. The Entins' son Jared, 14, isn't involved in research yet, but when his parents aren't hogging the modem, he logs onto one of a number of games bulletin boards so he can play interactive games with other modem users.

STEPHEN FRIANT, 38
PENNSAUKEN, NEW JERSEY

Stephen Friant, a professional researcher with the Academy of Natural Science in Philadelphia, uses a modem primarily to transfer hundreds of files written on his old Commodore 64 to his new IBM XT. "The Commodore 64 was a terrific machine for learning," says Friant, who used the C 64 at home and in his office until he and the research department acquired IBM computers. "When I graduated to the IBM XT, everything I'd done up until that point on the C 64 was dead-end." That's when Friant considered the modem as an inexpensive way to move data between machines. "It became a cheap solution to a complicated problem. The only difficult part was learning how to link the two computers. I spent half a day trying to figure it out, but once I got them to match, it fired—and I never lost a single line of data."

KATE MANCINI, 35
ROCKVILLE CENTRE, NEW YORK

"Owning a modem has really made an important difference in my life," says Kate Mancini, a consultant for her and her husband's home-based job-placement firm. "It's made getting a college degree a reality." Mancini, whose family of five was voted the 1985 Computing Family of the Year by FAMILY COMPUTING (Note: meet the 1986 Computing Family of the Year in this issue), is currently working toward her Bachelor of Arts in psychology. She commutes via modem to the American Open University, a



Kate Mancini,
Rockville Center, New York

fully accredited branch of the New York Institute of Technology in Brookville, New York. Sitting at her Apple Macintosh, Mancini gets her assignments, exchanges electronic messages with her teachers and classmates, and joins in on some on-line conferences. She makes her own school hours and can complete courses at her own pace. Mancini, who has to go to campus only to take final exams, says that without this on-line learning opportunity, she wouldn't have had the time to get a degree. "Commuting to school on a regular basis and being committed to specific class hours would be next to impossible," says Mancini, a mother of three. Even though Mancini is currently taking three classes, she isn't the most avid "telecommunicator" in her house. Her son Matthew, 16, spends hours at a time chatting on-line with friends, both new and old, about everything from new business ideas to girls.

MARIANNE MESSERSMITH, 37
PERTH AMBOY, NEW JERSEY

Marianne Messersmith's IBM XT at home helps with her job as an Assistant Regional Director for American Arbitration, but it was the computer and modem together that really changed her life.

Widowed in 1985, Messersmith decided to invest in a computer system that she and her children could use not only for fun and learning, but also as a tool that would allow her to do some office work at home and spend more time with her children.

"Playing games together was very important," says Messersmith, "since we were still trying to get over our loss."

After purchasing the computer, Messersmith bought a modem and the family (including son John, 9) tried CompuServe for the first time in July 1985. "We went into CB (Citizens Band Simulator) and we were all hooked! We met people from all over the country and made a lot of friends," she explains. "Around mid-

July, I met a very special friend, Ric. We met in person in August and on January 1, 1986, about 1 p.m., we were married before our CompuServe friends in Virginia. In fact, my husband proposed to me via computer."

The Messersmiths are avid gamers, and they regularly log on to PeopleLink, GEnie, and CompuServe to chat with friends and to play on-line games.

JERRY NOSIN, 35

JONESBORO, GEORGIA

"It's surprising how people who don't relate well personally can communicate through an electronic network," says Jerry Nosing, a trained psychologist. Because Nosing believes the anonymity of talking via modem is a useful therapeutic tool, he commits regular time to volunteer counseling—as "The Doctor" on The Atlanta Connection, one of Georgia's oldest bulletin boards. Nosing fields private questions from adults and teenagers struggling with minor social, spiritual, or family problems. His modem also allows him to perform office research projects at home.

BARRY PILGER, 37

BERKELEY, CALIFORNIA

Barry Pilger doesn't have to buy postage and mail letters any longer to pay some 15 regular monthly bills, including all his utilities and credit-card accounts. Not since signing up for home banking with Bank of America, which authorizes him to make electronic fund transfers via modem. Once a month, instead of writing checks and stuffing envelopes, Pilger sits down at his Kaypro II and sends payment instructions directly to the bank via modem. "It's a joyful experience throwing away the envelopes along with the other billing junk," laughs Pilger. Another feature of home banking that Pilger enjoys is the ability to pull up previous

statements and balance his account to the day. "I can see immediately when a check clears. I could also tie my Visa card in to draw cash against it, but I haven't done that yet," says Pilger, who writes about 60 checks a month.

JIM RITSCHER, 56

ST. PAUL, MINNESOTA

A researcher at the 3M Company in St. Paul who likes tracking his ancestry, Jim Ritscher uses a computer and modem to correspond with other genealogy buffs via electronic mail. Ritscher's recent on-line genealogy adventures include helping other Minnesotans trace ancestors through Italy, Germany, and Austria. "Most people who use electronic mail for family searches are asking questions about names, places, or dates," says Ritscher. CompuServe has about two hundred members across the country whose personal user profiles list genealogy as a hobby or interest. There are also bulletin boards devoted exclusively to genealogical research. Ritscher also uses electronic mail to set up meetings and expedite volunteer assignments for several civic, church, and school groups.

KATHY WRIGHT, 30

WILMINGTON, DELAWARE

Kathy Wright, a 30-year-old chemical engineer with three young children, runs a successful part-time business from her home with the help of a modem. Aware from personal experience that working families sometimes find it difficult to schedule household activities—such as scheduling babysitters or taxiing youngsters to day care, Wright has become a computer headhunter for married professionals seeking live-in "nannies." She advertises her service in local newspapers, and when a

WANTED: TIPS & HINTS! \$25 REWARD!

The FAMILY COMPUTING Forum on CompuServe (GO FAMFORUM), a meeting place for FAMILY COMPUTING readers and others looking for ways to make better use of their computers, now has new sections designed to reflect both new and ongoing departments in the magazine. Each section has a message area (bulletin board), where you can leave and/or read messages, and a Data Library, where you can leave or retrieve files. These files include BASIC programs and articles.

Here's the lineup of all our sections: 0) General; 1) Product/Buying Tips; 2) Games/Strategy; 3) Education/Family; 4) Telecomputing; 5) Home Office/Money; 6) ADAMania; 7) ADAM-CP/M; 8) Machine Specific; 9) The Programmer.

We encourage people to share their knowledge with other users by leaving tips & hints in the appropriate Data Library. Tell us new ways to use computers, software packages, and printers—for work, learning, or fun—and we'll pay \$25 for each item we publish in FAMILY COMPUTING.



Jerry Nosing,
Jonesboro, Georgia

working family responds, Wright conducts a home interview and completes a needs checklist. She then enters the checklist into her PC, and using a modem, signs on to Delphi. She searches the Child Care Connection data base for the nanny, whose profile most closely matches the family's needs. When she places a nanny, Wright collects a fee that she splits with the Child Care Connection. "I know what it's like struggling to find child care," says Wright, who hardly calls herself a computer expert. "I had all my kids in day care at one time and searched four months to find a nanny," she adds. ■

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the Programmer

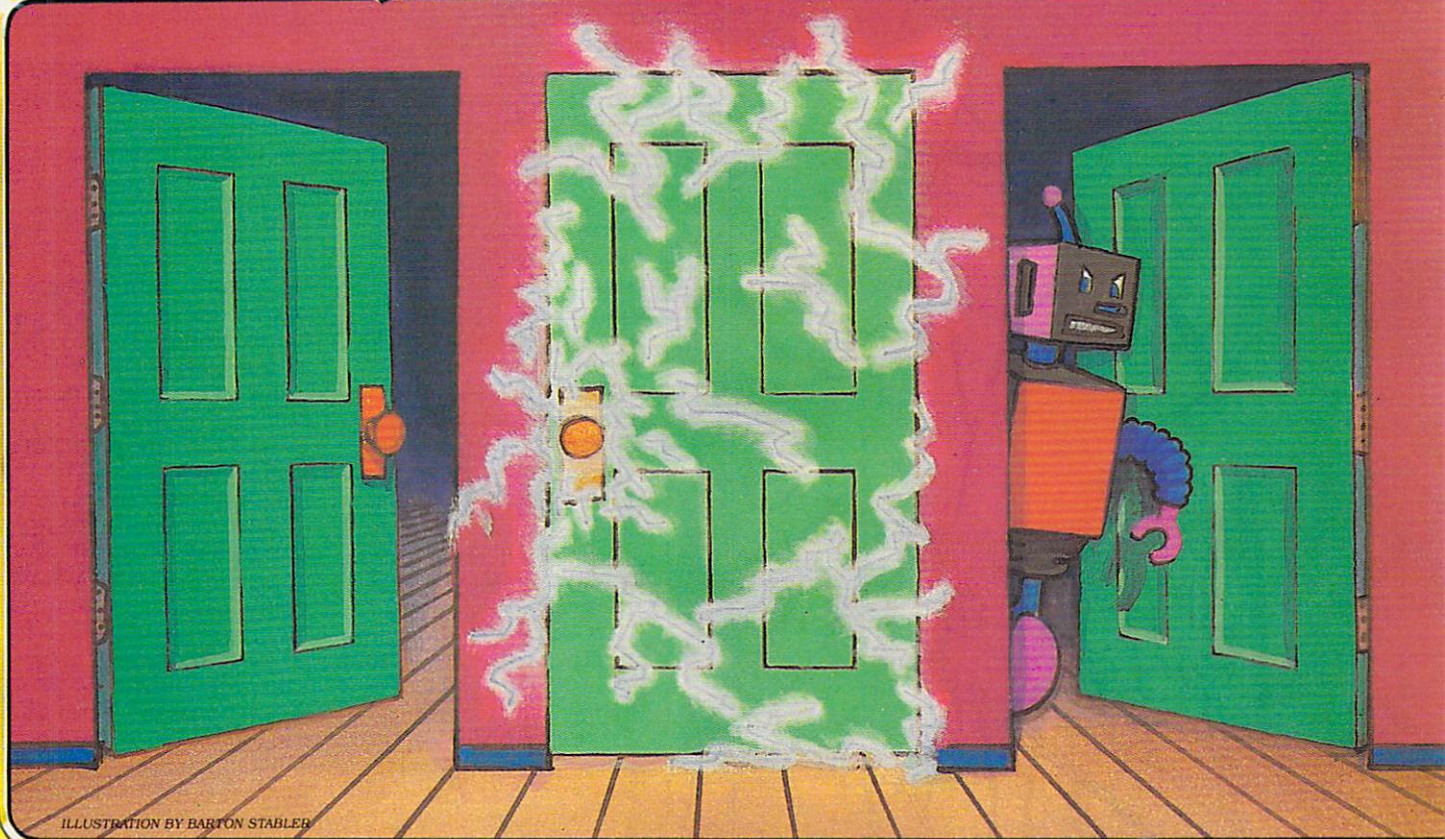


ILLUSTRATION BY BARTON STABLER



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HOME HELPER PROGRAM

Page 52

Let *Chore Chooser* help you cut the guff, and get on to doing all that stuff!

FUN-LEARNING PROGRAM

Page 66

Puzzle fans, take note! *Word Search* doesn't just let you solve puzzles, it lets you create them. You supply the words; then the program takes over, forming puzzles that you can solve on-screen or print out.

TIPS TO THE TYPIST

Page 74

How to type in FAMILY COMPUTING's programs, and what to do if a program doesn't work.

PROGRAMMING P.S.

Page 75

Enhancements to previous months' programs.

MORE PROGRAMS IN K-POWER

Page 81

Enjoy a nostalgic rendition of the old favorite, *School Days*, and advertise with a flashy *Marquee*.

ILLUSTRATION BY JAMES CHERRY III

Cherry

CHORE CHOOSER

BY JOEY LATIMER



As if doing chores weren't bad enough, many families have to deal with arguments over who's going to do what. With *Chore Chooser* making your family's weekly chore assignments, there won't be any fuss. Who can argue with an impartial machine that selects at random?

The program prints a weekly schedule for posting on the refrigerator door or bulletin board.

For each day, the schedule shows exactly what each person is expected to do.

The program isn't limited to family chores, either. With a little modification, it can produce schedules for car pools, neighborhood clubs, or hundreds of other common situations.

SETTING UP

Before running the program, you'll have to make

a list of chores that must be done every day. When doing so, keep in mind that not all members of the family may be capable of performing every chore. A young child can't move the car, for example. The answer to this problem is to make two or more versions of *Chore Chooser*—one for general chores and one for chores that only certain members of the family can handle. When you run the "general" version of the program (see *Running Chore Chooser*, below), you'll supply everyone's name. When running the "grown-ups only" version, you'll naturally enter only the names of adults.

Substitute your chores for the examples in DATA statements 1000-1110. Each chore should occupy one line, beginning with a line number, followed by the word DATA, a space, and then a brief description of the chore itself. (Don't use commas or other punctuation in a chore description.) For example, washing the dishes would probably be entered something like this:

1000 DATA WASHING DISHES

Add new line numbers as necessary to make room for all your chores, numbering them in increments of 10.

DATA statement 10000 (containing the word DONE) tells the computer where the end of your chore data is. Be sure not to delete it accidentally, and be careful not to enter any statements with numbers higher than 10000. Don't worry about room; since you number your chore DATA statements starting at 1000 and go up by 10's, you have room for 900 chores!

Once you've entered your chore data, SAVE a copy of the program on disk or cassette. The program is now ready to run.

RUNNING CHORE CHOOSER

Before typing RUN, make sure your printer is hooked up and ready to print.

Chore Chooser begins by asking you to enter the names of everybody in your family. Enter them one by one as you're asked, and press RETURN or ENTER after each name. When you're done entering names, just press RETURN or ENTER again to continue. The computer will then select at random among these names and assign all the chores impartially. If there are more chores than people, someone may have to do more than one thing. The program will try to balance this out through the week.

When the computer has made its choices, you'll be asked to press any key to print out the schedule. Afterward, you can press the "P" key to print another copy, the "M" key to reshuffle and choose again (if you don't think the computer's random assignments are appropriate), and the "S" key to start from scratch and enter names, or the "Q" key to quit.

Whenever chores change, as they tend to do seasonally, you can delete, add, or modify the chore DATA statements freely. Just make sure to leave statement 10000 alone, keeping it the highest numbered statement in the program, and SAVE a fresh copy of each modified version of *Chore Chooser* on disk or cassette for later use. —J.J.

Adam/Chore Chooser

```
10 LOMEM: 29000: DIM na$(35): tp$ = CHR$(32)
20 FOR i = 2 TO 20: tp$ = tp$ + CHR$(32): NEXT i
30 br$ = "=": FOR i = 2 TO 78
40 br$ = br$ + "=": NEXT i: nc = 1
50 READ du$: IF du$ <> "DONE" THEN nc = nc + 1: GOTO 50
60 nc = nc - 1: RESTORE: DIM ch$(nc)
70 FOR i = 1 TO nc: READ ch$(i)
80 IF LEN(ch$(i)) > 18 THEN ch$(i) = LEFT$(ch$(i), 17) +
  " "
90 NEXT i: m = 28000: POKE m, 62
100 POKE m+1, 0: POKE m+2, 50: POKE m+3, 117
110 POKE m+4, 253: POKE m+5, 201: CALL 28000
120 HOME: PRINT "Press any key to start."
130 IF PEEK(64885) = 0 THEN z = RND(1): GOTO 130
140 CALL 28000: HOME
150 PRINT TAB(8); "*-CHORE CHOOSER-": PRINT
160 PRINT "Please type in the name of each";
170 PRINT "person available for chores."
180 PRINT "Press <RETURN> after typing"
190 PRINT "each name."
200 PRINT: PRINT "When you have finished,"
210 PRINT "press <RETURN> again to"
220 PRINT "continue.": PRINT
230 nn = 1
240 INPUT ">"; na$(nn): IF na$(nn) <> "" THEN 270
250 IF nn < 3 THEN 240
260 nn = nn + 1: GOTO 310
270 IF LEN(na$(nn)) > 17 THEN na$(nn) = LEFT$(na$(nn),
  16) + " "
280 IF nn <= 34 THEN nn = nn + 1: GOTO 240
290 PRINT: PRINT "That's all the names I"
300 PRINT "can accept."
310 tl = nc/nn: IF tl <> INT(tl) THEN tl = INT(tl) + 1
320 pl = (tl + 1) * nn + 5: pl = pl - INT(pl/66) * 66
330 DIM ma$(tl * nn, 7)
340 PRINT: PRINT "Please stand by while I arrange";
350 PRINT "the chart.": FOR i = 1 TO 50
360 r1 = INT(RND(1) * nc) + 1: r2 = INT(RND(1) * nc) + 1
370 IF r2 <> r1 THEN t$ = ch$(r1): ch$(r1) = ch$(r2): ch
  $(r2) = t$
380 r2 = INT(RND(1) * nn) + 1: r1 = INT(RND(1) * nn) + 1
390 IF r2 <> r1 THEN t$ = na$(r2): na$(r2) = na$(r1): na
  $(r1) = t$
400 NEXT i: FOR i = 1 TO 7: FOR j = 1 TO tl * nn
410 ma$(j, i) = " ": NEXT j: NEXT i
420 np = 1: cp = 1: op = 0: dp = 1
430 ma$(np - 1, tl + op + 1, dp) = ch$(cp)
440 cp = cp + 1: IF cp > nc THEN cp = 1
450 np = np + 1: IF np > nn THEN np = 1
460 IF nn < nc AND (cp - INT(cp/nn) * nn) = 1 THEN op = op
  + 1
470 IF cp <> 1 THEN 430
480 FOR i = 1 TO 50
490 r1 = INT(RND(1) * nc) + 1: r2 = INT(RND(1) * nc) + 1
500 IF r2 <> r1 THEN t$ = ch$(r2): ch$(r2) = ch$(r1): ch
  $(r1) = t$
510 NEXT i
520 op = 0: dp = dp + 1: IF dp < 8 THEN 430
530 PRINT: PRINT "Make sure your printer is"
540 PRINT "ready, then press any key"
550 PRINT "to print the chart."
560 GET k$
570 PRINT: PRINT CHR$(4); "PR#1"
580 PRINT: PRINT LEFT$(br$, 69); "*-CHORE"
590 PRINT: PRINT
600 PRINT SPC(20); "Sunday"; SPC(14); "Monday";
610 PRINT SPC(14); "Tuesday": PRINT br$
620 FOR j = 0 TO tl * nn - 1
630 IF j/tl = INT(j/tl) THEN q$ = na$(j/tl + 1): PRINT q$
  ; LEFT$(tp$, 20 - LEN(q$)); GOTO 650
640 PRINT tp$;
650 FOR k = 1 TO 3
660 PRINT ma$(j + 1, k); LEFT$(tp$, 20 - LEN(ma$(j + 1, k)));
670 NEXT k
```

```
680 IF (j + 1)/tl = INT((j + 1)/tl) THEN PRINT br$
690 NEXT j
700 FOR i = 1 TO 66 - pl: PRINT: NEXT i
710 PRINT "CHOOSE-"; LEFT$(br$, 69)
720 PRINT: PRINT
730 PRINT "Wednesday"; SPC(11); "Thursday"; SPC(12);
740 PRINT "Friday"; SPC(14); "Saturday": PRINT br$
750 FOR j = 0 TO tl * nn - 1: FOR k = 4 TO 7
760 PRINT ma$(j + 1, k); LEFT$(tp$, 20 - LEN(ma$(j + 1, k)));
770 NEXT k
780 IF (j + 1)/tl = INT((j + 1)/tl) THEN PRINT br$
790 NEXT j
800 FOR i = 1 TO 65 - pl: PRINT: NEXT i
810 PRINT CHR$(4); "PR#0"
820 HOME: PRINT: PRINT "Would you like to ..."
830 PRINT: PRINT "<p>rint another copy of"
840 PRINT TAB(5); "this chart,"
850 PRINT "<m>ake a new chart from this"
860 PRINT TAB(5); "information,"
870 PRINT "<s>tart over, or"
880 PRINT "<q>uit? ";
890 GET k$: IF k$ > "Z" THEN k$ = CHR$(ASC(k$) - 32)
900 IF k$ = "P" THEN 530
910 IF k$ = "M" THEN 340
920 IF k$ = "S" THEN RUN
930 IF k$ = "Q" THEN HOME: END
940 GOTO 890
1000 DATA Walk dog
1010 DATA Dump trash
1020 DATA Weed flower bed
1030 DATA Water plants
1040 DATA Feed animals
1050 DATA Vacuum carpets
1060 DATA Dust furniture
1070 DATA Wash clothes
1080 DATA Make sack lunches
1090 DATA Do dishes
1100 DATA Sweep floors
1110 DATA Clean bathroom
10000 DATA DONE
```

Apple II series w/printer/Chore Chooser

```
10 DIM NA$(35): TP$ = CHR$(32)
20 FOR I = 2 TO 20: TP$ = TP$ + CHR$(32): NEXT I
30 BR$ = "=": FOR I = 2 TO 78
40 BR$ = BR$ + "=": NEXT I: NC = 1
50 READ DU$: IF DU$ <> "DONE" THEN NC = NC + 1: GOTO 50
60 NC = NC - 1: RESTORE: DIM CH$(NC)
70 FOR I = 1 TO NC: READ CH$(I)
80 IF LEN(CH$(I)) > 18 THEN CH$(I) = LEFT$(CH$(I), 17) +
  " "
90 NEXT I: HOME: POKE -16368, 0
100 PRINT "PRESS ANY KEY TO START."
110 IF PEEK(-16384) < 128 THEN Z = RND(1): GOTO 110
120 HOME: POKE -16368, 0
130 PRINT TAB(12); "*-CHORE CHOOSER-": PRINT
140 PRINT "PLEASE TYPE IN THE NAME OF EACH"
150 PRINT "PERSON AVAILABLE FOR CHORES."
160 PRINT "PRESS <RETURN> AFTER TYPING EACH NAME."
170 PRINT: PRINT "WHEN YOU HAVE FINISHED,"
180 PRINT "PRESS <RETURN> AGAIN TO CONTINUE.": PRINT
190 NN = 1
200 INPUT ">"; NA$(NN): IF NA$(NN) <> "" THEN 230
210 IF NN < 3 THEN 200
220 NN = NN + 1: GOTO 260
230 IF LEN(NA$(NN)) > 17 THEN NA$(NN) = LEFT$(NA$(NN),
  16) + " "
240 IF NN <= 34 THEN NN = NN + 1: GOTO 200
250 PRINT: PRINT "THAT'S ALL THE NAMES I CAN ACCEPT."
260 TL = NC/NN: IF TL <> INT(TL) THEN TL = INT(TL) + 1
270 PL = (TL + 1) * NN + 5: PL = PL - INT(PL/66) * 66
280 DIM MA$(TL * NN, 7)
290 PRINT: PRINT "PLEASE STAND BY WHILE I ARRANGE"
300 PRINT "THE CHART.": FOR I = 1 TO 50
```


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SCHOLAR
by brown disc

HOME HELPER PROGRAM

```

310 R1 = INT(RND(1)*NC)+1:R2 = INT(RND(1)*NC)+1
320 IF R2 <> R1 THEN TS = CH$(R2):CH$(R2) = CH$(R1):CH
$(R1) = TS
330 R1 = INT(RND(1)*NN)+1:R2 = INT(RND(1)*NN)+1
340 IF R2 <> R1 THEN TS = NAS(R2):NAS(R2) = NAS(R1):NA
$(R1) = TS
350 NEXT I:FOR I = 1 TO 7:FOR J = 1 TO TL*NN
360 MAS(J,I) = "--":NEXT J:NEXT I
370 NP = 1:CP = 1:OP = 0:DP = 1
380 MAS((NP-1)*TL+OP+1,DP) = CH$(CP)
390 CP = CP+1:IF CP > NC THEN CP = 1
400 NP = NP+1:IF NP > NN THEN NP = 1
410 IF NN < NC AND (CP-INT(CP/NN)*NN) = 1 THEN OP = OP
+1
420 IF CP <> 1 THEN 380
430 FOR I = 1 TO 50
440 R1 = INT(RND(1)*NC)+1:R2 = INT(RND(1)*NC)+1
450 IF R2 <> R1 THEN TS = CH$(R2):CH$(R2) = CH$(R1):CH
$(R1) = TS
460 NEXT I
470 OP = 0:DP = DP+1:IF DP < 8 THEN 380
480 PRINT:PRINT "MAKE SURE YOUR PRINTER IS READY,"
490 PRINT "THEN PRESS ANY KEY TO PRINT THE CHART.,"
500 GET K$
510 PRINT:PRINT CHR$(4);"PR#1"
520 PRINT:PRINT LEFT$(BR$,69);"*-CHORE"
530 PRINT:PRINT
540 PRINT SPC(20);"SUNDAY";SPC(14);"MONDAY";
550 PRINT SPC(14);"TUESDAY":PRINT BR$
560 FOR J = 0 TO TL*NN-1
570 IF J/TL = INT(J/TL) THEN Q$ = NAS(J/TL+1):PRINT Q$
;LEFT$(TP$,20-LEN(Q$));GOTO 590
580 PRINT TP$;
590 FOR K = 1 TO 3
600 PRINT MAS(J+1,K);LEFT$(TP$,20-LEN(MAS(J+1,K)));
610 NEXT K:PRINT
620 IF (J+1)/TL = INT((J+1)/TL) THEN PRINT BR$
630 NEXT J
640 FOR I = 1 TO 66-PL:PRINT:NEXT I
650 PRINT "CHOOSE-*";LEFT$(BR$,69)
660 PRINT:PRINT
670 PRINT "WEDNESDAY";SPC(11);"THURSDAY";SPC(12);
680 PRINT "FRIDAY";SPC(14);"SATURDAY":PRINT BR$
690 FOR J = 0 TO TL*NN-1:FOR K = 4 TO 7
700 PRINT MAS(J+1,K);LEFT$(TP$,20-LEN(MAS(J+1,K)));
710 NEXT K:PRINT
720 IF (J+1)/TL = INT((J+1)/TL) THEN PRINT BR$
730 NEXT J
740 FOR I = 1 TO 65-PL:PRINT:NEXT I
750 PRINT CHR$(4);"PR#0"
760 HOME:PRINT:PRINT "WOULD YOU LIKE TO ..."
770 PRINT:PRINT "<P>PRINT ANOTHER COPY OF THIS CHART,"
780 PRINT "<M>MAKE A NEW CHART FROM THIS"
790 PRINT TAB(5);"INFORMATION,"
800 PRINT "<S>START OVER, OR"
810 PRINT "<Q>QUIT? ";
820 GET K$:IF K$ > "Z" THEN K$ = CHR$(ASC(K$)-32)
830 IF K$ = "P" THEN 480
840 IF K$ = "M" THEN 290
850 IF K$ = "S" THEN RUN
860 IF K$ = "Q" THEN HOME:END
870 GOTO 820
1000 DATA WALK DOG
1010 DATA DUMP TRASH
1020 DATA WEED FLOWER BED
1030 DATA WATER PLANTS
1040 DATA FEED ANIMALS
1050 DATA VACUUM CARPETS
1060 DATA DUST FURNITURE
1070 DATA WASH CLOTHES
1080 DATA MAKE SACK LUNCHES
1090 DATA DO DISHES
1100 DATA SWEEP FLOORS
1110 DATA CLEAN BATHROOM
10000 DATA DONE

```

Atari w/printer/Chore Chooser

```

10 OPEN #1,4,0,"K":OPEN #2,8,0,"P:"
20 DIM DUS(20),NAS(630),TP$(20),BAR$(78),TS(120)
30 BAR$="":BAR$(78)="":BAR$(2)=BAR$
40 NAS=CHR$(32):NAS(630)=CHR$(32):NAS(2)=NAS
50 TP$=NAS(1,20):NC=1
60 READ DUS:IF DUS<>"DONE" THEN NC=NC+1:GOTO 60
70 NC=NC-1:RESTORE :DIM CH$(NC*18)
80 CH$(1)=CHR$(32):CH$(NC*18)=CHR$(32):CH$(2)=CH$
90 FOR I=1 TO NC:READ TS
100 IF LEN(TS)>18 THEN TS=TS(1,17):TS(18)=". "
110 CH$(I*18-17,I*18)=TS:NEXT I
120 PRINT CHR$(125);" *-CHORE CHOOSE-*":PRINT
130 PRINT "PLEASE TYPE IN THE NAME OF EACH"
140 PRINT "PERSON AVAILABLE FOR CHORES."
150 PRINT :PRINT "WHEN YOU HAVE FINISHED,"
160 PRINT "PRESS <RETURN> AGAIN TO CONTINUE."
170 PRINT :NN=1
180 PRINT ">";:INPUT #16;T$
190 IF T$<>" " THEN 200
200 IF NN<3 THEN 180
210 NN=NN-1:GOTO 260
220 IF LEN(T$)>17 THEN TS=TS(1,17):TS(18)=". " :TS(19)=T
P$(19)
230 NAS(NN*18-17,NN*18)=TS
240 IF NN<34 THEN NN=NN+1:GOTO 180
250 PRINT :PRINT "THAT'S ALL THE NAMES I CAN ACCEPT."
260 TL=NC/NN:IF TL<>INT(TL) THEN TL=INT(TL+1)
270 PL=(TL+1)*NN+5:PL=PL-INT(PL/66)*66
280 DIM MAS(TL*NN*140)
290 PRINT :PRINT "PLEASE STAND BY WHILE I ARRANGE"
300 PRINT "THE CHART."
310 FOR I=1 TO 50
320 R1=INT(RND(0)*NC)+1:R2=INT(RND(0)*NC)+1
330 IF R2<>R1 THEN TS=CH$(R2*18-17,R2*18):CH$(R2*18-17
,R2*18)=CH$(R1*18-17,R1*18):CH$(R1*18-17,R1*18)=TS
340 R1=INT(RND(0)*NN)+1:R2=INT(RND(0)*NN)+1
350 IF R2<>R1 THEN TS=NAS(R2*18-17,R2*18):NAS(R2*18-17
,R2*18)=NAS(R1*18-17,R1*18):NAS(R1*18-17,R1*18)=TS
360 NEXT I
370 MAS="--":MAS(3)=TP$(1,18)
380 MAS(TL*NN*140-19)=MAS(1,20):MAS(21)=MAS
390 NP=1:CP=1:OP=0:DP=1
400 X=((NP-1)*TL+OP+1)*140+20*DP
410 MAS(X-159,X-142)=CH$(CP*18-17,CP*18)
420 CP=CP+1:IF CP>NC THEN CP=1
430 NP=NP+1:IF NP>NN THEN NP=1
440 IF NN<NC AND (CP-INT(CP/NN)*NN)=1 THEN OP=OP+1
450 IF CP>1 THEN 400
460 FOR I=1 TO 50
470 R1=INT(RND(0)*NC)+1:R2=INT(RND(0)*NC)+1
480 IF R2<>R1 THEN TS=CH$(R2*18-17,R2*18):CH$(R2*18-17
,R2*18)=CH$(R1*18-17,R1*18):CH$(R1*18-17,R1*18)=TS
490 NEXT I
500 OP=0:DP=DP+1:IF DP<8 THEN 400
510 PRINT :PRINT "MAKE SURE YOUR PRINTER IS READY,"
520 PRINT "THEN PRESS ANY KEY TO PRINT THE CHART."
530 GET #1,KEY
540 PRINT #2;BAR$(1,70);"*-CHORE":PRINT #2:PRINT #2
550 PRINT #2;TP$;"SUNDAY";TP$(7);"MONDAY";
560 PRINT #2;TP$(7);"TUESDAY":PRINT #2;BAR$
570 FOR J=0 TO TL*NN-1
580 IF J/TL=INT(J/TL) THEN TS=NAS((J/TL+1)*18-17,(J/TL
+1)*18):PRINT #2;TS;TP$(1,20-LEN(TS));GOTO 600
590 PRINT #2;TP$;
600 PRINT #2;MAS(J*140+1,J*140+60)
610 IF (J+1)/TL=INT((J+1)/TL) THEN PRINT #2;BAR$
620 NEXT J:FOR I=1 TO 66-PL:PRINT #2:NEXT I
630 PRINT #2;"CHOOSE-*";BAR$(1,69):PRINT #2:PRINT #2
640 PRINT #2;"WEDNESDAY";TP$(10);"THURSDAY";
650 PRINT #2;TP$(9);"FRIDAY";TP$(7);"SATURDAY"
660 PRINT #2;BAR$:FOR J=0 TO TL*NN-1
670 PRINT #2;MAS((J+1)*140-79,(J+1)*140)
680 IF (J+1)/TL=INT((J+1)/TL) THEN PRINT #2;BAR$
690 NEXT J:FOR I=1 TO 66-PL:PRINT #2:NEXT I

```


HOME HELPER PROGRAM

```

700 POKE 752,1
710 PRINT CHR$(125);"WOULD YOU LIKE TO ..."
720 PRINT :PRINT "<P>RINT ANOTHER COPY OF THIS CHART,"
730 PRINT "<M>AKE A NEW CHART FROM THIS INFO,"
740 PRINT "<S>TART OVER, OR"
750 PRINT "<Q>UIT?"
760 GET #1,KEY:IF KEY>90 THEN KEY=KEY-32
770 POKE 752,0
780 IF KEY=80 THEN 510
790 IF KEY=77 THEN 290
800 IF KEY=83 THEN RUN
810 IF KEY=81 THEN PRINT CHR$(125);:END
820 GOTO 760
1000 DATA WALK DOG
1010 DATA DUMP TRASH
1020 DATA WEED FLOWER BED
1030 DATA WATER PLANTS
1040 DATA FEED ANIMALS
1050 DATA VACUUM CARPETS
1060 DATA DUST FURNITURE
1070 DATA WASH CLOTHES
1080 DATA MAKE SACK LUNCHES
1090 DATA DO DISHES
1100 DATA SWEEP FLOORS
1110 DATA CLEAN BATHROOMS
1140 DATA DONE

```

Commodore 64 & 128 (C 64 mode) & VIC-20 w/printer/Chore Chooser

```

10 DIM NAS(35):TP$=CHR$(32)
20 FOR I=2 TO 20:TP$=TP$+CHR$(32):NEXT I
30 BR$="":FOR I=2 TO 78:BR$=BR$+"":NEXT I:NC=1
40 READ DUS:IF DUS<>"DONE" THEN NC=NC+1:GOTO 40
50 NC=NC-1:RESTORE:DIM CH$(NC)
60 FOR I=1 TO NC:READ CH$(I)
70 IF LEN(CH$(I))>18 THEN CH$(I)=LEFT$(CH$(I),17)+". "
80 NEXT I:PRINT CHR$(147);"PRESS ANY KEY."
90 GET K$:IF K$="" THEN Z=RND(1):GOTO 90
100 PRINT CHR$(147);" *-CHORE CHOOSE-*":PRINT
110 PRINT "PLEASE TYPE IN"
120 PRINT "THE NAME OF EACH"
130 PRINT "PERSON AVAILABLE"
140 PRINT "FOR CHORES. PRESS"
150 PRINT "<RETURN> AFTER TYPING"
160 PRINT "EACH NAME."
170 PRINT:PRINT "WHEN YOU'VE FINISHED,"
180 PRINT "PRESS <RETURN> AGAIN"
190 PRINT "TO CONTINUE.":PRINT
200 NN=1
210 INPUT NAS(NN):IF NAS(NN)<>" " THEN 240
220 IF NN<3 THEN 210
230 NN=NN-1:GOTO 280
240 IF LEN(NAS(NN))>17 THEN NAS(NN)=LEFT$(NAS(NN),16)+
  ". "
250 IF NN<=34 THEN NN=NN+1:GOTO 210
260 PRINT:PRINT "THAT'S ALL THE"
270 PRINT "NAMES I CAN ACCEPT."
280 TL=NC/NN:IF TL<>INT(TL) THEN TL=INT(TL+1)
290 PL=(TL+1)*NN+6:PL=PL-INT(PL/66)*66
300 DIM MAS(TL*NN,7)
310 PRINT:PRINT "PLEASE STAND BY WHILE"
320 PRINT "I ARRANGE THE CHART."
330 FOR I=1 TO 50
340 R1=INT(RND(1)*NC)+1:R2=INT(RND(1)*NC)+1
350 IF R2<>R1 THEN T$=CH$(R2):CH$(R2)=CH$(R1):CH$(R1)=
  T$
360 R1=INT(RND(1)*NN)+1:R2=INT(RND(1)*NN)+1
370 IF R2<>R1 THEN T$=NAS(R2):NAS(R2)=NAS(R1):NAS(R1)=
  T$
380 NEXT I:FOR I=1 TO 7:FOR J=1 TO TL*NN
390 MAS(J,I)="--":NEXT J:NEXT I
400 NP=1:CP=1:OP=0:DP=1
410 MAS((NP-1)*TL+OP+1,DP)=CH$(CP)
420 CP=CP+1:IF CP>NC THEN CP=1
430 NP=NP+1:IF NP>NN THEN NP=1

```

```

440 IF NN<NC AND (CP-INT(CP/NN)*NN)=1 THEN OP=OP+1
450 IF CP>1 THEN 410
460 FOR I=1 TO 50
470 R1=INT(RND(1)*NC)+1:R2=INT(RND(1)*NC)+1
480 IF R2<>R1 THEN T$=CH$(R2):CH$(R2)=CH$(R1):CH$(R1)=
  T$
490 NEXT I
500 OP=0:DP=DP+1:IF DP<8 THEN 410
510 PRINT:PRINT "MAKE SURE YOUR"
520 PRINT "PRINTER IS READY,"
530 PRINT "THEN PRESS ANY KEY"
540 PRINT "TO PRINT THE CHART."
550 GET K$:IF K$="" THEN 550
560 OPEN 4,4:CMD 4
570 PRINT LEFT$(BR$,69);"-*-CHORE"
580 PRINT:PRINT
590 PRINT SPC(20);"SUNDAY";SPC(14);"MONDAY";
600 PRINT SPC(14);"TUESDAY":PRINT BR$
610 FOR J=0 TO TL*NN-1
620 IF J/TL<>INT(J/TL) THEN 650
630 Q$=NAS(J/TL+1)
640 PRINT Q$:LEFT$(TP$,20-LEN(Q$));:GOTO 660
650 PRINT TP$;
660 FOR K=1 TO 3
670 PRINT MAS(J+1,K);LEFT$(TP$,20-LEN(MAS(J+1,K)));
680 NEXT K:PRINT
690 IF (J+1)/TL=INT((J+1)/TL) THEN PRINT BR$
700 NEXT J
710 FOR I=1 TO 66-PL:PRINT:NEXT I
720 PRINT:PRINT "CHOOSE-*";LEFT$(BR$,69)
730 PRINT:PRINT
740 PRINT "WEDNESDAY";SPC(11);"THURSDAY";SPC(12);
750 PRINT "FRIDAY";SPC(14);"SATURDAY":PRINT BR$
760 FOR J=0 TO TL*NN-1:FOR K=4 TO 7
770 PRINT MAS(J+1,K);LEFT$(TP$,20-LEN(MAS(J+1,K)));
780 NEXT K:PRINT
790 IF (J+1)/TL=INT((J+1)/TL) THEN PRINT BR$
800 NEXT J
810 FOR I=1 TO 65-PL:PRINT:NEXT I
820 PRINT#4:CLOSE 4
830 PRINT CHR$(147);"WOULD YOU LIKE TO ..."
840 PRINT:PRINT "<P>RINT ANOTHER COPY"
850 PRINT TAB(3);"OF THIS CHART,"
860 PRINT "<M>AKE A NEW CHART"
870 PRINT TAB(3);"FROM THIS INFO,"
880 PRINT "<S>TART OVER, OR"
890 PRINT "<Q>UIT?"
900 GET K$
910 IF K$="P" THEN 510
920 IF K$="M" THEN 310
930 IF K$="S" THEN RUN
940 IF K$="Q" THEN PRINT CHR$(147);:END
950 GOTO 900
1000 DATA WALK DOG
1010 DATA DUMP TRASH
1020 DATA WEED FLOWER BED
1030 DATA WATER PLANTS
1040 DATA FEED ANIMALS
1050 DATA VACUUM CARPETS
1060 DATA DUST FURNITURE
1070 DATA WASH CLOTHES
1080 DATA MAKE SACK LUNCHES
1090 DATA DO DISHES
1100 DATA SWEEP FLOORS
1110 DATA CLEAN BATHROOM
10000 DATA DONE

```

Macintosh w/Microsoft BASIC 2.0 or 2.1 w/printer/Chore Chooser

```

DIM NAS(35)
CALL TEXTFONT(1):CALL TEXTSIZE(12)
CALL TEXTFACE(64):RANDOMIZE TIMER
WINDOW 1,"- CHORE CHOOSE -", (0,38)-(530,338)
TP$=STRING$(20,32):BAR$=STRING$(78,""):NC=1
READ.DUM.STRING:

```


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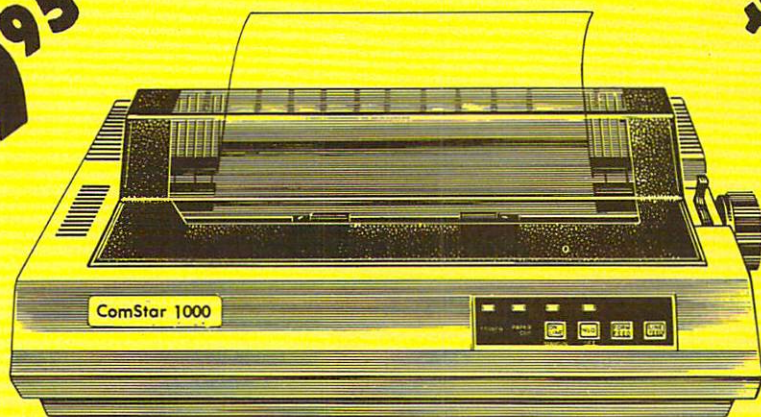
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HOME HELPER PROGRAM

```

READ DUS:IF DUS<>"DONE" THEN NC=NC+1:GOTO READ.DUM
.STRING
NC=NC-1:RESTORE:DIM CH$(NC)
FOR I=1 TO NC:READ CH$(I)
IF LEN(CH$(I))>18 THEN CH$(I)=LEFT$(CH$(I),17)+". "
NEXT I
INSTRUCTIONS:
CLS:PRINT
PRINT "Please type in the name of each person available for chores."
PRINT "Press <Return> after typing each name."
PRINT "When you have finished,"
PRINT "press <Return> again to continue.":PRINT
NN=1
INPUT.NAME.PERSON:
INPUT NAS(NN)
IF NAS(NN)="" THEN IF NN<3 THEN INPUT.NAME.PERSON
ELSE NN=NN-1:GOTO FINISHED.READING.NAMES
IF LEN(NAS(NN))>17 THEN NAS(NN)=LEFT$(NAS(NN),16)+". "
IF NN<=34 THEN NN=NN+1:GOTO INPUT.NAME.PERSON
PRINT:PRINT "That's all the names I can accept."
FINISHED.READING.NAMES:
TL=NC/NN:IF TL<>INT(TL) THEN TL=INT(TL+1)
DIM MAS(TL*NN,7)
STANDBY.ARRANGE.CHART:
PRINT:PRINT "Please stand by while I arrange the chart."
FOR I=1 TO 50
R1=INT(RND*NC)+1:R2=INT(RND*NC)+1
IF R2<>R1 THEN SWAP CH$(R1),CH$(R2)
R1=INT(RND*NN)+1:R2=INT(RND*NN)+1
IF R2<>R1 THEN SWAP NAS(R1),NAS(R2)
NEXT I:FOR I=1 TO TL*NN:FOR J=1 TO 7
MAS(I,J)="--":NEXT J:NEXT I
NP=1:CP=1:OP=0:DP=1
PUT.CHORES.IN.GRID:
MAS((NP-1)*TL+OP+1,DP)=CH$(CP)
CP=(CP MOD NC)+1:NP=(NP MOD NN)+1
IF NN<NC AND (CP MOD NN=1) THEN OP=OP+1
IF CP>1 THEN PUT.CHORES.IN.GRID
FOR I=1 TO 50
R1=INT(RND*NC)+1:R2=INT(RND*NC)+1
IF R2<>R1 THEN SWAP CH$(R1),CH$(R2)
NEXT I
OP=0:DP=DP+1:IF DP<8 THEN PUT.CHORES.IN.GRID
CHECK.PRINTER.READY:
PRINT:PRINT "Make sure your printer is ready,"
PRINT "then press any key to print the chart."
GET.START.KEY:
KS=INKEY$:IF KS="" THEN GET.START.KEY
LPRINT:LPRINT LEFT$(BAR$,69);"*-CHORE"
LPRINT:LPRINT
LPRINT SPC(20);"Sunday";SPC(14);"Monday";
LPRINT SPC(14);"Tuesday"
LPRINT BAR$
FOR J=0 TO TL*NN-1
IF J MOD TL=0 THEN QS=NAS(J/TL+1):LPRINT QS;LEFT$(
TP$,20-LEN(QS)); ELSE LPRINT TP$;
FOR K=1 TO 3
LPRINT MAS(J+1,K);LEFT$(TP$,20-LEN(MAS(J+1,K)));
NEXT K:LPRINT
IF (J+1) MOD TL=0 THEN LPRINT BAR$
NEXT J:LPRINT CHR$(12);
LPRINT:LPRINT "CHOOSE-*";LEFT$(BAR$,69)
LPRINT:LPRINT
LPRINT "Wednesday";SPC(11);"Thursday";
LPRINT SPC(12);"Friday";SPC(13);"Saturday"
LPRINT BAR$
FOR J=0 TO TL*NN-1:FOR K=4 TO 7
LPRINT MAS(J+1,K);LEFT$(TP$,20-LEN(MAS(J+1,K)));
NEXT K:LPRINT
IF (J+1) MOD TL=0 THEN LPRINT BAR$
NEXT J:LPRINT CHR$(12);
CLS:PRINT:PRINT "Would you like to ..."

```

```

PRINT:PRINT "<p>print another copy of this chart,"
PRINT "<m>ake a new chart from this information,"
PRINT "<s>tart over, or"
PRINT "<q>uit?"
GET.PREFERENCE.KEY:
KS=INKEY$:IF KS="" THEN GET.PREFERENCE.KEY
IF KS="Z" THEN KS=CHR$(ASC(KS)-32)
IF KS="P" THEN CHECK.PRINTER.READY
IF KS="M" THEN STANDBY.ARRANGE.CHART
IF KS="S" THEN RUN
IF KS="Q" THEN CLS:END
GOTO GET.PREFERENCE.KEY
1000 DATA Walk dog
1010 DATA Dump trash
1020 DATA Weed flower bed
1030 DATA Water plants
1040 DATA Feed animals
1050 DATA Vacuum carpets
1060 DATA Dust furniture
1070 DATA Wash clothes
1080 DATA Make sack lunches
1090 DATA Do dishes
1100 DATA Sweep floors
1110 DATA Clean bathroom
10000 DATA DONE

```

Tandy Color Computer w/printer/Chore Chooser

```

10 CLEAR 3000:DIM NAS(35):TP$=CHR$(32)
20 FOR I=2 TO 20:TP$=TP$+CHR$(32):NEXT I
30 BR$="":FOR I=2 TO 78:BR$=BR$+"":NEXT I
40 READ DUS:IF DUS<>"DONE" THEN NC=NC+1:GOTO 40
50 NC=NC-1:RESTORE:DIM CH$(NC)
60 FOR I=1 TO NC:READ CH$(I)
70 IF LEN(CH$(I))>18 THEN CH$(I)=LEFT$(CH$(I),17)+". "
80 NEXT I
90 CLS:PRINT TAB(10);"*-CHORE CHOOSE-*":PRINT
100 PRINT "PLEASE TYPE IN THE NAME OF EACH"
110 PRINT "PERSON AVAILABLE FOR CHORES."
120 PRINT "PRESS <ENTER> AFTER TYPING EACH NAME."
130 PRINT:PRINT "WHEN YOU HAVE FINISHED,"
140 PRINT "PRESS <ENTER> AGAIN TO CONTINUE."
150 PRINT:NN=1
160 INPUT NAS(NN)
170 IF NAS(NN)="" THEN IF NN<3 THEN 160 ELSE NN=NN-1:GOTO 220
180 IF LEN(NAS(NN))>17 THEN NAS(NN)=LEFT$(NAS(NN),16)+". "
190 IF NN<=34 THEN NN=NN+1:GOTO 160
200 PRINT:PRINT "THAT'S ALL THE NAMES"
210 PRINT "I CAN ACCEPT."
220 TL=NC/NN:IF TL<>INT(TL) THEN TL=INT(TL+1)
230 PL=(TL+1)*NN+5:PL=PL-INT(PL/66)*66
240 DIM MAS(TL*NN,7)
250 PRINT
260 PRINT "PLEASE STAND BY WHILE I ARRANGE THE CHART."
270 FOR I=1 TO 50:R2=RND(NC):R1=RND(NC)
280 IF R2<>R1 THEN TS=CH$(R2):CH$(R2)=CH$(R1):CH$(R1)=TS
290 R2=RND(NN):R1=RND(NN)
300 IF R2<>R1 THEN TS=NAS(R2):NAS(R2)=NAS(R1):NAS(R1)=TS
310 NEXT I:FOR I=1 TO TL*NN:FOR J=1 TO 7
320 MAS(I,J)="--":NEXT J:NEXT I
330 NP=1:CP=1:OP=0:DP=1
340 MAS((NP-1)*TL+OP+1,DP)=CH$(CP)
350 CP=CP+1:IF CP>NC THEN CP=1
360 NP=NP+1:IF NP>NN THEN NP=1
370 IF NN<NC AND (CP-INT(CP/NN)*NN)=1 THEN OP=OP+1
380 IF CP>1 THEN 340
390 FOR I=1 TO 50:R2=RND(NC):R1=RND(NC)
400 IF R1<>R2 THEN TS=CH$(R1):CH$(R1)=CH$(R2):CH$(R2)=TS
410 NEXT I
420 OP=0:DP=DP+1:IF DP<8 THEN 340

```




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Printers supported on the Commodore version:

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HOME HELPER PROGRAM

```

430 PRINT:PRINT "MAKE SURE YOUR PRINTER IS READY,";
440 PRINT "THEN PRESS ANY KEY TO PRINT THE CHART."
450 K$=INKEY$:IF K$="" THEN 450
460 PRINT#-2,LEFT$(BR$,69);"*-CHORE"
470 PRINT#-2:PRINT#-2
480 PRINT#-2,TAB(20);"SUNDAY";TAB(40);"MONDAY";
490 PRINT#-2,TAB(60);"TUESDAY":PRINT#-2,BR$
500 FOR J=0 TO TL*NN-1
510 IF J/TL=INT(J/TL) THEN Q$=NAS(J/TL+1):PRINT#-2,Q$;
LEFT$(TP$,20-LEN(Q$)); ELSE PRINT#-2,TP$;
520 FOR K=1 TO 3
530 PRINT#-2,MAS(J+1,K);LEFT$(TP$,20-LEN(MAS(J+1,K)));
540 NEXT K:PRINT#-2
550 IF (J+1)/TL=INT((J+1)/TL) THEN PRINT#-2,BR$
560 NEXT J:FOR I=1 TO 66-PL:PRINT #2:NEXT I
570 PRINT#-2,"CHOOSE-*";LEFT$(BR$,69)
580 PRINT#-2:PRINT#-2
590 PRINT#-2,"WEDNESDAY";TAB(20);"THURSDAY";TAB(40);
600 PRINT #2,"FRIDAY";TAB(60);"SATURDAY":PRINT#-2,BR$
610 FOR J=0 TO TL*NN-1:FOR K=4 TO 7
620 PRINT#-2,MAS(J+1,K);LEFT$(TP$,20-LEN(MAS(J+1,K)));
630 NEXT K:PRINT#-2
640 IF (J+1)/TL=INT((J+1)/TL) THEN PRINT#-2,BR$
650 NEXT J:FOR I=1 TO 66-PL:PRINT #2:NEXT I
660 CLS:PRINT:PRINT "WOULD YOU LIKE TO ..."
670 PRINT:PRINT "<P>PRINT ANOTHER COPY"
680 PRINT TAB(4);"OF THIS CHART,"
690 PRINT "<M>AKE A NEW CHART FROM"
700 PRINT TAB(4);"THIS INFORMATION,"
710 PRINT "<S>TART OVER, OR"
720 PRINT "<Q>UIT?"
730 K$=INKEY$:IF K$="" THEN 730
740 IF K$="P" THEN 430
750 IF K$="M" THEN 250
760 IF K$="S" THEN RUN
770 IF K$="Q" THEN CLS:END
780 GOTO 730
1000 DATA WALK DOG
1010 DATA DUMP TRASH
1020 DATA WEED FLOWER BED
1030 DATA WATER PLANTS
1040 DATA FEED ANIMALS
1050 DATA VACUUM CARPETS
1060 DATA DUST FURNITURE
1070 DATA WASH CLOTHES
1080 DATA MAKE SACK LUNCHES
1090 DATA DO DISHES
1100 DATA SWEEP FLOORS
1110 DATA CLEAN BATHROOM
10000 DATA DONE

```

Tandy Model III or 4 (Model III mode) w/printer/ Chore Chooser

```

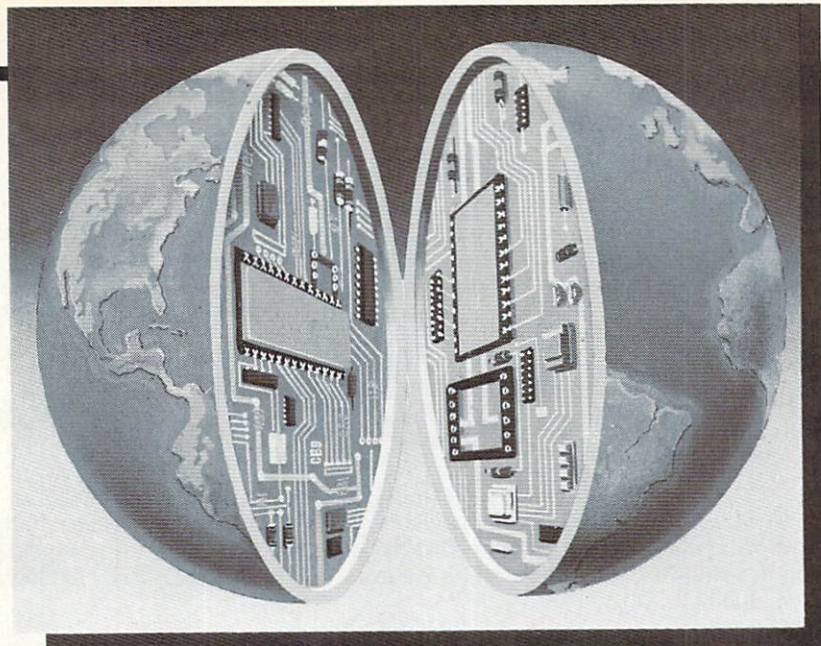
10 CLEAR 3000:RANDOM
20 DIM NAS(35):TP$=STRING$(20,32)
30 BR$=STRING$(78,"="):NC=1
40 READ DUS:IF DUS<>"DONE" THEN NC=NC+1:GOTO 40
50 NC=NC-1:RESTORE:DIM CH$(NC)
60 FOR I=1 TO NC:READ CH$(I)
70 IF LEN(CH$(NN))>18 THEN CH$(NN)=LEFT$(CH$(NN),17)+
" "
80 NEXT I
90 CLS:PRINT TAB(23);"*-CHORE CHOOSE-*":PRINT
100 PRINT "Please type in the name of each person avai
lable for chores."
110 PRINT "Press <ENTER> after typing each name."
120 PRINT:PRINT "When you have finished,"
130 PRINT "press <ENTER> again to continue.":PRINT
140 NN=1
150 INPUT NAS(NN)
160 IF NAS(NN)="" THEN IF NN<3 THEN 150 ELSE NN=NN-1:G
OTO 200
170 IF LEN(NAS(NN))>17 THEN NAS(NN)=LEFT$(NAS(NN),16)+
" "

```

```

180 IF NN<=34 THEN NN=NN+1:GOTO 150
190 PRINT:PRINT "That's all the names I can accept."
200 TL=NC/NN:IF TL<>INT(TL) THEN TL=INT(TL+1)
210 PL=(TL+1)*NN+5:PL=PL-INT(PL/66)*66
220 DIM MAS(TL*NN,7)
230 PRINT:PRINT "Please stand by while I arrange the c
hart."
240 FOR I=1 TO 50:R2=RND(NC):R1=RND(NC)
250 IF R2<>R1 THEN TS=CH$(R2):CH$(R2)=CH$(R1):CH$(R1)=
TS
260 R2=RND(NN):R1=RND(NN)
270 IF R2<>R1 THEN TS=NAS(R2):NAS(R2)=NAS(R1):NAS(R1)=
TS
280 NEXT I:FOR I=1 TO TL*NN:FOR J=1 TO 7
290 MAS(I,J)="--":NEXT J:NEXT I
300 NP=1:CP=1:OP=0:DP=1
310 MAS((NP-1)*TL+OP+1,DP)=CH$(CP)
320 CP=CP+1:IF CP>NC THEN CP=1
330 NP=NP+1:IF NP>NN THEN NP=1
340 IF NN<NC AND (CP-INT(CP/NN)*NN)=1 THEN OP=OP+1
350 IF CP>1 THEN 310
360 FOR I=1 TO 50
370 R1=RND(NC):R2=RND(NC)
380 IF R1<>R2 THEN TS=CH$(R2):CH$(R2)=CH$(R1):CH$(R1)=
TS
390 NEXT I
400 OP=0:DP=DP+1:IF DP<8 THEN 310
410 PRINT:PRINT "Make sure your printer is ready,"
420 PRINT "then press any key to print the chart."
430 K$=INKEY$:IF K$="" THEN 430
440 LPRINT:LPRINT LEFT$(BR$,69);"*-CHORE"
450 LPRINT:LPRINT
460 LPRINT TAB(20);"Sunday";TAB(40);"Monday";
470 LPRINT TAB(60);"Tuesday":LPRINT BR$
480 FOR J=0 TO TL*NN-1
490 IF J/TL=INT(J/TL) THEN Q$=NAS(J/TL+1):LPRINT Q$;LE
FT$(TP$,20-LEN(Q$)); ELSE LPRINT TP$;
500 FOR K=1 TO 3
510 LPRINT MAS(J+1,K);LEFT$(TP$,20-LEN(MAS(J+1,K)));
520 NEXT K:LPRINT
530 IF (J+1)/TL=INT((J+1)/TL) THEN LPRINT BR$
540 NEXT J:FOR I=1 TO 66-PL:LPRINT:NEXT I
550 LPRINT "CHOOSE-*";LEFT$(BR$,69)
560 LPRINT:LPRINT
570 LPRINT "Wednesday";TAB(20);"Thursday";TAB(40);
580 LPRINT "Friday";TAB(60);"Saturday":LPRINT BR$
590 FOR J=0 TO TL*NN-1:FOR K=4 TO 7
600 LPRINT MAS(J+1,K);LEFT$(TP$,20-LEN(MAS(J+1,K)));
610 NEXT K:LPRINT
620 IF (J+1)/TL=INT((J+1)/TL) THEN LPRINT BR$
630 NEXT J:FOR I=1 TO 65-PL:LPRINT:NEXT I
640 CLS:PRINT:PRINT "Would you like to ..."
650 PRINT:PRINT "<P>print another copy of this chart,"
660 PRINT "<M>ake a new chart from this information,"
670 PRINT "<S>tart over, or"
680 PRINT "<Q>uit?"
690 K$=INKEY$:IF K$="" THEN 690
700 IF K$="Z" THEN K$=CHR$(ASC(K$)-32)
710 IF K$="P" THEN 410
720 IF K$="M" THEN 230
730 IF K$="S" THEN RUN
740 IF K$="Q" THEN CLS:END
750 GOTO 690
10000 DATA Walk dog
1010 DATA Dump trash
1020 DATA Weed flower bed
1030 DATA Water plants
1040 DATA Feed animals
1050 DATA Vacuum carpets
1060 DATA Dust Furniture
1070 DATA Wash clothes
1080 DATA Make sack lunches
1090 DATA Do dishes
1100 DATA Sweep floors
1110 DATA Clean bathroom
10000 DATA DONE

```

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WORD SEARCH

BY JOHN JAINSCHIGG



What doesn't take up much room and can keep almost anyone amused for hours? Word-search puzzles, of course! Great for car trips and waiting rooms, word-search (or "find-a-word") puzzles are also a good way for kids to learn word-recognition skills and improve vocabulary. After all, if you can recognize a word spelled backward on the diagonal, you can recognize it anywhere.

The trouble with word-search puzzles is that the commercial kind aren't guaranteed to contain the words you want, and making up your own puzzles from scratch is no picnic. These problems are solved with *Word Search*, a program that helps you create word-search puzzles for friends and family to solve on the computer screen or print out for fun to go!

YOU SUPPLY THE WORDS

Word Search lets you create puzzles in three sizes: small, medium, and large. Precise dimensions vary from one version of the program to another, according to screen size.

Once you've chosen a size, you'll be asked if you wish to see the puzzle on the screen as it's being formed. If you elect to see the puzzle, you'll be permitted to help *Word Search* along when it has trouble fitting a word in. An empty border will appear on the screen, and you'll see each word as the program places it.

Whether you're watching the puzzle as it forms or not, the program will ask you to enter, one by one, the words you want to appear in your puzzle. Note that you may not enter words that are too long to fit into the puzzle size you've selected.

As each word is entered, *Word Search* will try to fit it into your puzzle. Whenever possible, it will try to overlap words, increasing the density and difficulty of your puzzle and making it possible to enter more words than could fit otherwise.

Word Search isn't perfect, of course, and occasionally it won't be able to fit a word in. When this happens, the program will do one of two things. If you've elected to watch the puzzle being formed, *Word Search* will ask you to specify a place for the word it's having trouble with. Do so by moving the cursor to where you want the word to begin in the grid. (Use the following keys to direct the cursor: "I" [up], "J" [left], "K" [down], and "L" [right].) Press RETURN or ENTER, and then move the cursor to the word's ending position and press RETURN or ENTER once again. If you can't find a place, abandon the word by pressing the "A" key, and go on. If, on the other hand, you've chosen not to watch and participate in the formation of the puzzle, *Word Search* will automatically abandon any word it can't find a

place for.

As the puzzle fills up, *Word Search* will eventually start having more and more trouble fitting in words. It will, however, keep trying new words until you tell it to quit. Do so by pressing RETURN or ENTER at the WHAT IS YOUR WORD? prompt.

SOLVING YOUR PUZZLE

When your puzzle is finished, *Word Search* will ask you whether you want to solve the puzzle on the screen or print it out, along with a word list. Additional options permit

you to print out a word list for reference, abandon the puzzle and try again, or quit.

To solve a puzzle on the screen, move the cursor (using the keys specified above) to the beginning of a word, press RETURN or ENTER, move the cursor to the end of the word, and press RETURN or ENTER once again. *Word Search* will even highlight the word you've found and tell you how many words you have left to go. You can quit and return to the options menu at any time by pressing the "M" key.

Adam/Word Search

```
10 DIM dr(7,2),dm(3,2),cu$(26),m$(6):NORMAL
20 FOR z = 0 TO 7:READ dr(z,1),dr(z,2):NEXT z
30 FOR z = 1 TO 3:READ dm(z,1),dm(z,2):NEXT z
40 FOR z = 1 TO 26:cu$(z) = "":NEXT z
50 FOR z = 1 TO 6:m$(z) = "<" + STR$(z) + ">":NEXT z
60 sp$ = CHR$(32):FOR z = 1 TO 124:z$ = z$ + sp$:NEXT z
70 GOSUB 2000:PRINT "<1> Small (10 x 10)"
80 PRINT "<2> Medium (20 x 15)"
90 PRINT "<3> Large (28 x 15)":PRINT
100 PRINT "Which size puzzle do you want?"
110 PRINT "to create? ";
120 GET k$:k = ASC(k$)-48:IF k < 1 OR k > 3 THEN 120
130 gx = dm(k,1):gy = dm(k,2):wl = gx*gy
140 DIM p$(gx,gy),w$(wl):re$ = CHR$(13)
150 lm = 16-gx/2:nw = 0:GOSUB 2000
160 PRINT "Would you like to see the?"
170 PRINT "puzzle as it's being built? ";:GOSUB 2100
180 sp = (k$ = "Y"):GOSUB 2000:IF sp THEN GOSUB 2300
190 VTAB 21:HTAB 1:INPUT "What is your word? ";wd$
200 t = LEN(wd$):GOSUB 2500
210 IF t = 0 THEN ON (nw > 0) GOTO 790:GOTO 190
220 IF t <= gx AND t <= 19 THEN 250
230 VTAB 21:HTAB 1
240 PRINT "That word is too long to fit.":GOTO 320
250 nw$ = "":ef = 0
260 FOR z = 1 TO t:k = ASC(MID$(wd$,z,1))
270 IF k < 65 OR (k > 90 AND k < 97) OR k > 122 THEN ef = 1:z = t:GOTO 290
280 nw$ = nw$ + CHR$(k-32*(k > 96))
290 NEXT z:IF NOT ef THEN 330
300 VTAB 21:HTAB 1:PRINT "That word contains"
310 PRINT "nonalphabetic characters."
320 GOSUB 2600:GOSUB 2500:GOTO 190
330 IF nw = 0 THEN 370
340 jf = 0:FOR z = 1 TO nw
350 IF nw$ = w$(z) THEN jf = 1:z = nw
360 NEXT z:IF jf THEN 190
370 maxc = 0:ffl = 0:FOR p = 1 TO LEN(nw$)
380 cl = ASC(MID$(nw$,p,1))-64
390 IF cu$(cl) = "" THEN 500
400 FOR cr = 1 TO LEN(cu$(cl)) STEP 2
410 cx = ASC(MID$(cu$(cl),cr,1))
420 cy = ASC(MID$(cu$(cl),cr+1,1))
430 FOR d = 0 TO 7:cd = d+4-INT((d+4)/8)*8
440 bx = cx+dr(cd,1)*(p-1):by = cy+dr(cd,2)*(p-1)
450 x = bx:y = by:GOSUB 4000
460 IF NOT fit THEN 490
470 ffl = 1:IF numc <= maxc THEN 490
480 maxc = numc:wx = bx:wy = by:wd = d
490 NEXT d,cr
500 NEXT p
510 IF ffl THEN x = wx:y = wy:d = wd:GOTO 680
```



```

520 FOR t = 1 TO 100:bx = INT(RND(1)*(gx-1))+1
530 by = INT(RND(1)*(gy-1))+1:d = INT(RND(1)*8)
540 x = bx:y = by:GOSUB 4000:IF fit THEN t = 100
550 NEXT t:IF fit THEN x = bx:y = by:GOTO 680
560 GOSUB 2500:VTAB 21:HTAB 1
570 PRINT "I can't seem to fit"
580 PRINT CHR$(34);nw$;CHR$(34);" IN."
590 IF NOT sp THEN GOSUB 2600:GOSUB 2500:GOTO 190
600 PRINT "Would you care to try? ";
610 GOSUB 2100:GOSUB 2500:IF k$ = "N" THEN 190
620 px = 1:py = 1:GOSUB 5000:IF ef THEN 190
630 x = bx:y = by:GOSUB 4010
640 IF fit THEN x = bx:y = by:GOTO 690
650 GOSUB 2500
660 VTAB 22:PRINT "Sorry, but that doesn't fit."
670 GOSUB 2800:ON k$ = "A" GOTO 190:GOTO 620
680 vx = dr(d,1):vy = dr(d,2)
690 nw = nw+1:w$(nw) = nw$:FOR z = 1 TO LEN(nw$)
700 p$(x,y) = MID$(nw$,z,1):lp = ASC(p$(x,y))-64
710 IF LEN(cu$(lp)) = 254 THEN cu$(lp) = RIGHT$(cu$(lp),252)
720 cu$(lp) = cu$(lp)+CHR$(x)+CHR$(y)
730 IF sp THEN VTAB y+3:HTAB x+lm-1:PRINT p$(x,y);
740 x = x+vx:y = y+vy:NEXT z
750 GOSUB 2500:IF nw < wl THEN 190
760 VTAB 21:HTAB 1
770 PRINT "I don't have space for any"
780 PRINT "more words.":GOSUB 2600
790 FOR i = 1 TO gx:FOR j = 1 TO gy
800 IF p$(i,j) = "" THEN p$(i,j) = CHR$(INT(RND(1)*26)+65)
810 NEXT j,i
820 qz = 1:wf = 0:uw = nw:wp = 1
830 GOSUB 2000:PRINT "Would you like to ..."
840 PRINT:PRINT:c = 1:IF wf = 0 THEN 880
850 PRINT m$(c);"continue playing,":c = c+1
860 PRINT m$(c);"play from the beginning,"
870 c = c+1:GOTO 890
880 PRINT m$(c);"play your puzzle on-screen,":c = c+1
890 PRINT m$(c);"print puzzle (w/word list),":c = c+1
900 PRINT m$(c);"print out a word list,":c = c+1
910 PRINT m$(c);"leave this puzzle, or":c = c+1
920 PRINT m$(c);"quit? ";
930 GET k$:s = ASC(k$)-48
940 IF s < 1 OR s > 5+(wf > 0) THEN 930
950 GOSUB 2000:IF wf = 0 THEN 980
960 IF s = 2 THEN GOSUB 2900
970 s = s-(s < 1)
980 ON s GOTO 990,1300,1300,1410,1430
990 GOSUB 2400:px = 1:py = 1
1000 VTAB 20:HTAB 1
1010 PRINT "You've yet to find ";uw;" word(s). "
1020 GOSUB 3000:VTAB 21:PRINT "WORD #";:GOSUB 3200
1030 GOSUB 5000:IF ef THEN 1030
1040 IF mf THEN 830
1050 ws$ = "":x = bx:y = by
1060 t$ = p$(x,y)
1070 IF ASC(t$) > 128 THEN t$ = CHR$(ASC(t$)-128)
1080 ws$ = ws$+t$:IF x <> ex OR y <> ey THEN x = x+vx:
y = y+vy:GOTO 1060
1090 z = 1
1100 IF LEFT$(ws$(z),1) = re$ AND MID$(ws$(z),2) = ws$ T
HEN 1150
1110 IF ws$(z) = ws$ THEN 1180
1120 z = z+1:IF z <= nw THEN 1100
1130 GOSUB 2700:VTAB 22:HTAB 1
1140 PRINT "That word isn't in the list.":GOTO 1170
1150 GOSUB 2700:VTAB 22:HTAB 1
1160 PRINT "You've already found that word.";
1170 GOSUB 2600:GOSUB 2700:GOSUB 3000:GOTO 1030
1180 ws$(z) = re$+ws$(z):x = bx:y = by
1190 INVERSE:t = ASC(p$(x,y))
1200 IF t > 128 THEN t = t-128:GOTO 1220
1210 p$(x,y) = CHR$(t+128)
1220 VTAB y+3:HTAB x+lm-1:PRINT CHR$(t);
1230 IF x <> ex OR y <> ey THEN x = x+vx:y = y+vy:GOTO
1190

```

COMMODORE ★ ATTARI ★ IBM ★ APPLE

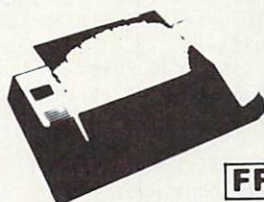
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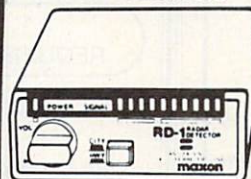
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```

1240 NORMAL:wf = wf+1:uw = nw+wf:IF uw > 0 THEN 1000
1250 GOSUB 2900:VTAB 20:HTAB 1:PRINT LEFT$(z$,30)
1260 GOSUB 2500
1270 VTAB 21:HTAB 1:PRINT "Congratulations!"
1280 PRINT "You've solved the puzzle."
1290 GOSUB 2600:GOTO 820
1300 PRINT "Press any key"
1310 PRINT "When printer is ready.":GOSUB 2200
1320 PRINT:PRINT CHR$(4);"PR#1"
1330 PRINT:IF s = 3 THEN 1380
1340 FOR i = 1 TO gy:FOR j = 1 TO gx
1350 t = ASC(p$(j,i)):IF t > 128 THEN t = t-128
1360 PRINT CHR$(t);sp$;:NEXT j:PRINT:NEXT i
1370 PRINT:PRINT
1380 FOR z = 1 TO nw:t$ = w$(z)
1390 IF LEFT$(t$,1) = re$ THEN t$ = MID$(t$,2)
1400 PRINT t$;NEXT z:PRINT CHR$(4);"PR#0":GOTO 830
1410 PRINT "Are you sure you want to start again? ";
1420 GOSUB 2100:ON k$ = "N" GOTO 830:RUN
1430 PRINT "Are you sure you want to quit?";
1440 GOSUB 2100:ON k$ = "N" GOTO 830:HOME:END
2000 HOME:PRINT TAB(10);"*Word search*":PRINT:RETURN
2100 GOSUB 2200:IF k$ <> "Y" AND k$ <> "N" THEN 2100
2110 RETURN
2200 GET k$:k = ASC(k$):IF k > 96 THEN k = k-32
2210 k$ = CHR$(k):RETURN
2300 INVERSE:VTAB 3:HTAB lm-1:PRINT LEFT$(z$,gx+2)
2310 FOR z = 1 TO gy:VTAB z+3:HTAB lm-1:PRINT sp$
2320 VTAB z+3:HTAB lm+gx:PRINT sp$:NEXT z
2330 HTAB lm-1:PRINT LEFT$(z$,gx+2):NORMAL:RETURN
2400 GOSUB 2300:FOR i = 1 TO gy:VTAB i+3:HTAB lm
2410 FOR j = 1 TO gx:t$ = p$(j,i)
2420 IF t$ = "" THEN PRINT sp$;:GOTO 2450
2430 t = ASC(t$):IF t < 128 THEN PRINT t$;:GOTO 2450
2440 INVERSE:PRINT CHR$(t-128);:NORMAL
2450 NEXT j,i:RETURN
2500 VTAB 21:HTAB 1:PRINT LEFT$(z$,92);:RETURN
2600 PRINT "Press <RETURN> to continue.";
2610 GOSUB 2200:ON k$ <> re$ GOTO 2610:RETURN

```

```

2700 VTAB 22:HTAB 1:PRINT LEFT$(z$,61);:RETURN
2800 PRINT "<T>=Try again <A>=Abandon";
2810 GOSUB 2200:IF k$ <> "A" AND k$ <> "T" THEN 2810
2820 GOSUB 2700:RETURN
2900 FOR i = 1 TO gx:FOR j = 1 TO gy:t = ASC(p$(i,j))
2910 IF t > 128 THEN p$(i,j) = CHR$(t-128)
2920 NEXT j,i:FOR z = 1 TO nw
2930 IF LEFT$(w$(z),1) = re$ THEN w$(z) = MID$(w$(z),2
)
2940 NEXT z:wf = 0:uw = nw:wp = 1:RETURN
3000 VTAB 22:HTAB 1
3010 PRINT "<S. BAR>=Next word <ESC>=Menu":RETURN
3200 VTAB 21:HTAB 7:PRINT wp;";"
3210 IF LEFT$(w$(wp),1) <> re$ THEN PRINT w$(wp);"." :R
ETURN
3220 INVERSE:PRINT MID$(w$(wp),2);"." :NORMAL:RETURN
4000 vx = dr(d,1):vy = dr(d,2)
4010 fit = 1:numc = 0
4020 ex = x+vx*(LEN(nw$)-1):ey = y+vy*(LEN(nw$)-1)
4030 IF x < 1 OR x > gx OR y < 1 OR y > gy OR ex < 1 O
R ex > gx OR ey < 1 OR ey > gy THEN fit = 0:RETURN
4040 FOR z = 1 TO LEN(nw$)
4050 t$ = p$(x,y):IF t$ = "" THEN 4090
4060 IF ASC(t$) > 128 THEN t$ = CHR$(ASC(t$)-128)
4070 IF t$ = MID$(nw$,z,1) THEN numc = numc+1:GOTO 409
0
4080 fit = 0:z = LEN(nw$)
4090 x = x+vx:y = y+vy:NEXT z:RETURN
5000 VTAB 23:HTAB 1
5010 PRINT "Press <RET> at start of word."
5020 GOSUB 6000:IF mf THEN RETURN
5030 bx = px:by = py:VTAB 23:HTAB 1
5040 PRINT "Press <RETURN> at end of word."
5050 GOSUB 6000:IF mf THEN RETURN
5060 ex = px:ey = py:vx = ex-bx
5070 vy = ey-by:ax = ABS(vx):ay = ABS(vy)
5080 IF vy = 0 THEN sl = 0:GOTO 5100
5090 sl = vx/vy
5100 IF (ABS(sl) = 0 OR ABS(sl) = 1) AND ((ax = LEN(nw

```



```

$)-1 OR ay = LEN(nw$)-1 OR qz) THEN vx = SGN(vx):vy =
SGN(vy):ef = 0:RETURN
5110 GOSUB 2700:VTAB 22:HTAB 1
5120 PRINT "I think you've made a mistake."
5130 GOSUB 2800:IF qz THEN GOSUB 3000
5140 ON k$ = "I" GOTO 5000:ef = 1:RETURN
6000 VTAB py+3:HTAB px+lm-1
6010 GOSUB 2200:IF k = 13 THEN mf = 0:RETURN
6020 IF NOT qz OR (k <> 32 AND k <> 27) THEN 6070
6030 IF k = 27 THEN mf = 1:RETURN
6040 wp = wp+1:IF wp > nw THEN wp = 1
6050 VTAB 21:HTAB 7:PRINT LEFT$(z$,24)
6060 GOSUB 3200:GOTO 6000
6070 IF k$ < "I" OR k$ > "L" THEN 6010
6080 px = px+(k$ = "L")-(k$ = "J")
6090 py = py+(k$ = "K")-(k$ = "I")
6100 px = px+gx*((px = 0)-(px = gx+1))
6110 py = py+gy*((py = 0)-(py = gy+1)):GOTO 6000
7000 DATA 0,-1,1,-1,0,1,0,1,-1,1,-1,0,-1,-1
8000 DATA 10,10,20,15,28,15

```

Apple II series/Word Search

```

10 DIM DR(7,2),DM(3,2),CUS(26),MS(6):NORMAL
20 FOR Z = 0 TO 7:READ DR(Z,1),DR(Z,2):NEXT Z
30 FOR Z = 1 TO 3:READ DM(Z,1),DM(Z,2):NEXT Z
40 FOR Z = 1 TO 26:CUS(Z) = "":NEXT Z
50 FOR Z = 1 TO 6:MS(Z) = "<" + STR$(Z) + ">":NEXT Z
60 SP$ = CHR$(32):FOR Z = 1 TO 160:Z$ = Z$ + SP$:NEXT Z
70 GOSUB 2000:PRINT "<1> SMALL (10 X 10)"
80 PRINT "<2> MEDIUM (20 X 15)"
90 PRINT "<3> LARGE (37 X 15)":PRINT
100 PRINT "WHICH SIZE PUZZLE DO YOU WANT TO CREATE?";
110 GET K$:K = ASC(K$)-48:IF K < 1 OR K > 3 THEN 110
120 GX = DM(K,1):GY = DM(K,2):WL = GX*GY
130 DIM PS(GX,GY),WS(WL):RES = CHR$(13)
140 LM = 20-INT(GX/2):NW = 0:GOSUB 2000
150 PRINT "WOULD YOU LIKE TO SEE THE PUZZLE AS IT'S BE

```

```

ING BUILT? "":GOSUB 2100
160 SP = (K$ = "Y"):GOSUB 2000:IF SP THEN GOSUB 2300
170 VTAB 21:HTAB 1:INPUT "WHAT IS YOUR WORD? ";WD$
180 T = LEN(WD$):GOSUB 2500
190 IF SCRN(14,0)+16*SCRN(14,1) = 215 THEN 210
200 GOSUB 2000:IF SP THEN GOSUB 2400
210 IF T = 0 THEN ON (NW > 0) GOTO 790:GOTO 170
220 IF T <= GX AND T <= 28 THEN 250
230 VTAB 22:HTAB 1
240 PRINT "THAT WORD IS TOO LONG TO FIT.":GOTO 320
250 NWS = "":EF = 0
260 FOR Z = 1 TO T:K = ASC(MID$(WD$,Z,1))
270 IF K < 65 OR (K > 90 AND K < 97) OR K > 122 THEN E
F = 1:Z = T:GOTO 290
280 NWS = NWS + CHR$(K-32*(K > 96))
290 NEXT Z:IF NOT EF THEN 330
300 VTAB 21:HTAB 1:PRINT "THAT WORD"
310 PRINT "CONTAINS NONALPHABETIC CHARACTERS."
320 GOSUB 2600:GOSUB 2500:GOTO 170
330 IF NW = 0 THEN 370
340 JF = 0:FOR Z = 1 TO NW
350 IF NWS = WS(Z) THEN JF = 1:Z = NW
360 NEXT Z:IF JF THEN 170
370 MAXC = 0:FFL = 0:FOR P = 1 TO LEN(NWS)
380 CL = ASC(MID$(NWS,P,1))-64
390 IF CUS(CL) = "" THEN 500
400 FOR CR = 1 TO LEN(CUS(CL)):STEP 2
410 CX = ASC(MID$(CUS(CL),CR,1))
420 CY = ASC(MID$(CUS(CL),CR+1,1))
430 FOR D = 0 TO 7:CD = D+4-INT((D+4)/8)*8
440 BX = CX+DR(CD,1)*(P-1):BY = CY+DR(CD,2)*(P-1)
450 X = BX:Y = BY:GOSUB 4000
460 IF NOT FIT THEN 490
470 FFL = 1:IF NUMC <= MAXC THEN 490
480 MAXC = NUMC:WX = BX:WY = BY:WD = D
490 NEXT D,CR
500 NEXT P
510 IF FFL THEN X = WX:Y = WY:D = WD:GOTO 680
520 FOR T = 1 TO 100:BX = INT(RND(1)*(GX-1))+1

```

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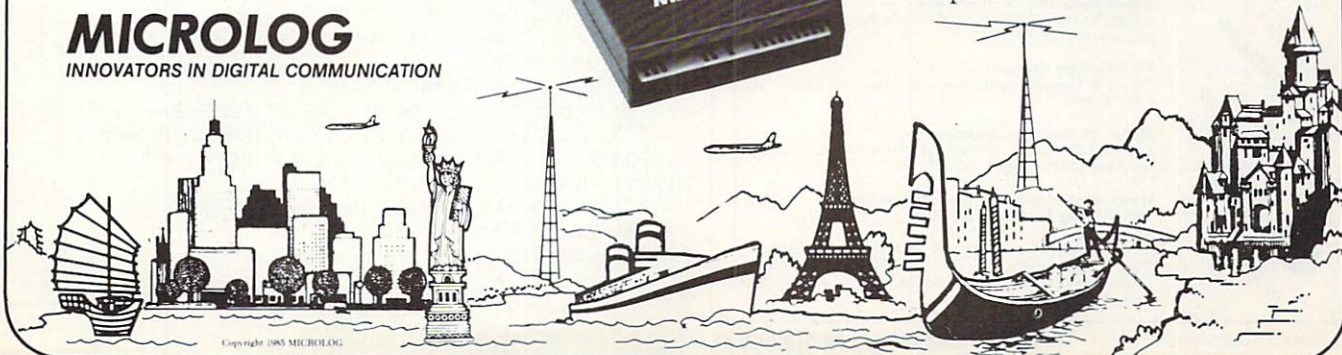
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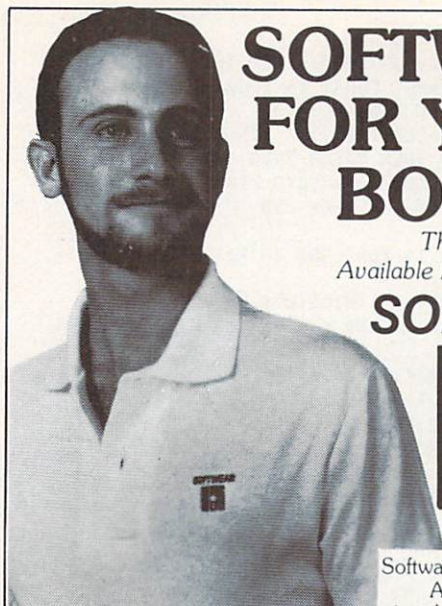
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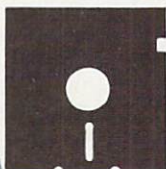




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```

530 BY = INT(RND(1)*(GY-1))+1:D = INT(RND(1)*8)
540 X = BX:Y = BY:GOSUB 4000:IF FIT THEN T = 100
550 NEXT T:IF FIT THEN X = BX:Y = BY:GOTO 680
560 GOSUB 2500:VTAB 22:HTAB 1
570 PRINT "I CAN'T SEEM TO FIT ";
580 PRINT CHR$(34);NWS;CHR$(34);" IN."
590 IF NOT SP THEN GOSUB 2600:GOSUB 2700:GOTO 170
600 PRINT "WOULD YOU CARE TO TRY? ";
610 GOSUB 2100:GOSUB 2500:IF K$ = "N" THEN 170
620 PX = 1:PY = 1:GOSUB 5000:IF EF THEN 170
630 X = BX:Y = BY:GOSUB 4010
640 IF FIT THEN X = BX:Y = BY:GOTO 690
650 GOSUB 2500
660 VTAB 22:PRINT "SORRY, BUT THAT DOESN'T FIT."
670 GOSUB 2800:ON K$ = "A" GOTO 170:GOTO 620
680 VX = DR(D,1):VY = DR(D,2)
690 NW = NW+1:W$(NW) = NWS:FOR Z = 1 TO LEN(NWS)
700 PS(X,Y) = MID$(NWS,Z,1):LP = ASC(PS(X,Y))-64
710 IF LEN(CUS(LP)) = 254 THEN CUS(LP) = RIGHTS(CUS(LP),252)
720 CUS(LP) = CUS(LP)+CHR$(X)+CHR$(Y)
730 IF SP THEN VTAB Y+3:HTAB X+LM-1:PRINT PS(X,Y)
740 X = X+VX:Y = Y+VY:NEXT Z
750 GOSUB 2500:IF NW < WL THEN 170
760 VTAB 21:HTAB 1
770 PRINT "I DON'T HAVE SPACE FOR ANY MORE WORDS."
780 GOSUB 2600
790 FOR I = 1 TO GX:FOR J = 1 TO GY
800 IF PS(I,J) = "" THEN PS(I,J) = CHR$(INT(RND(1)*26)+65)
810 NEXT J,I
820 QZ = 1:WF = 0:UW = NW:WP = 1
830 GOSUB 2000:PRINT "WOULD YOU LIKE TO ..."
840 PRINT:PRINT:C = 1:IF WF = 0 THEN 890
850 PRINT MS(C);"CONTINUE PLAYING WHERE YOU LEFT OFF,"
;
860 C = C+1
870 PRINT MS(C);"PLAY AGAIN FROM THE BEGINNING,"
880 C = C+1:GOTO 900
890 PRINT MS(C);"PLAY YOUR PUZZLE ON-SCREEN,"C = C+1
900 PRINT MS(C);"PRINT PUZZLE OUT (WITH WORD LIST),"
910 C = C+1:PRINT MS(C);"PRINT OUT A WORD LIST,"
920 C = C+1:PRINT MS(C);"LEAVE THIS PUZZLE, OR"
930 C = C+1:PRINT MS(C);"QUIT? ";
940 GET K$:S = ASC(K$)-48
950 IF S < 1 OR S > 5+(WF > 0) THEN 940
960 GOSUB 2000:IF WF = 0 THEN 990
970 IF S = 2 THEN GOSUB 2900
980 S = S-(S < 1)
990 ON S GOTO 1000,1320,1320,1420,1440
1000 GOSUB 2400:PX = 1:PY = 1
1010 VTAB 20:HTAB 1
1020 PRINT "YOU HAVE YET TO FIND ";UW;" WORD(S). "
1030 GOSUB 3000:VTAB 21:PRINT "WORD #";:GOSUB 3200
1040 GOSUB 5000:IF EF THEN 1040
1050 IF MF THEN 830
1060 W$ = "":X = BX:Y = BY
1070 TS = PS(X,Y)
1080 IF ASC(TS) > 128 THEN TS = CHR$(ASC(TS)-128)
1090 W$ = W$+TS:IF X <> EX OR Y <> EY THEN X = X+VX:Y = Y+VY:GOTO 1070
1100 Z = 1
1110 IF LEFT$(W$(Z),1) = RE$ AND MID$(W$(Z),2) = W$ THEN 1170
1120 IF W$(Z) = W$ THEN 1200
1130 Z = Z+1:IF Z <= NW THEN 1110
1140 GOSUB 2700:VTAB 22:HTAB 1
1150 PRINT "SORRY, BUT THAT WORD ISN'T IN THE LIST."
1160 GOTO 1190
1170 GOSUB 2700:VTAB 22:HTAB 1
1180 PRINT "SORRY, YOU'VE ALREADY FOUND THAT WORD."
1190 GOSUB 2600:GOSUB 2700:GOSUB 3000:GOTO 1040
1200 W$(Z) = RE$+W$(Z):X = BX:Y = BY
1210 INVERSE:T = ASC(PS(X,Y))
1220 IF T > 128 THEN T = T-128:GOTO 1240
1230 PS(X,Y) = CHR$(T+128)
1240 VTAB Y+3:HTAB X+LM-1:PRINT CHR$(T)
1250 IF X <> EX OR Y <> EY THEN X = X+VX:Y = Y+VY:GOTO

```



```

1210
1260 NORMAL:WF = WF+1:UW = NW-WF:IF UW > 0 THEN 1010
1270 GOSUB 2900:VTAB 20:HTAB 1:PRINT LEFT$(Z$,39)
1280 GOSUB 2500
1290 VTAB 21:HTAB 1:PRINT "CONGRATULATIONS!"
1300 PRINT "YOU'VE SOLVED THE PUZZLE."
1310 GOSUB 2600:GOTO 820
1320 PRINT "PRESS ANY KEY WHEN PRINTER IS READY.";
1330 GOSUB 2200:PRINT:PRINT CHR$(4);"PR#1"
1340 PRINT:IF S = 3 THEN 1390
1350 FOR I = 1 TO GY:FOR J = 1 TO GX
1360 T = ASC(P$(J,I)):IF T > 128 THEN T = T-128
1370 PRINT CHR$(T);SP$;NEXT J:PRINT:NEXT I
1380 PRINT:PRINT
1390 FOR Z = 1 TO NW:TS = W$(Z)
1400 IF LEFT$(TS,1) = RES THEN TS = MID$(TS,2)
1410 PRINT TS:NEXT Z:PRINT CHR$(4);"PR#0":GOTO 830
1420 PRINT "ARE YOU SURE YOU WANT TO START AGAIN? ";
1430 GOSUB 2100:ON K$ = "N" GOTO 830:RUN
1440 PRINT "ARE YOU SURE YOU WANT TO QUIT? ";
1450 GOSUB 2100:ON K$ = "N" GOTO 830:HOME:END
2000 HOME:PRINT TAB(14);"*WORD SEARCH*":PRINT:RETURN
2100 GOSUB 2200:IF K$ <> "Y" AND K$ <> "N" THEN 2100
2110 RETURN
2200 GET K$:K = ASC(K$):IF K > 96 THEN K = K-32
2210 K$ = CHR$(K):RETURN
2300 INVERSE:VTAB 3:HTAB LM-1:PRINT LEFT$(Z$,GX+2)
2310 FOR Z = 1 TO GY:VTAB Z+3:HTAB LM-1:PRINT SP$
2320 VTAB Z+3:HTAB LM+GX:PRINT SP$:NEXT Z
2330 HTAB LM-1:PRINT LEFT$(Z$,GX+2):NORMAL:RETURN
2400 GOSUB 2300:FOR I = 1 TO GY:VTAB I+3:HTAB LM
2410 FOR J = 1 TO GX:TS = P$(J,I)
2420 IF TS = "" THEN PRINT SP$;GOTO 2450
2430 T = ASC(TS):IF T < 128 THEN PRINT TS;GOTO 2450
2440 INVERSE:PRINT CHR$(T-128);NORMAL
2450 NEXT J,I:RETURN
2500 VTAB 21:HTAB 1:PRINT LEFT$(Z$,119);:RETURN
2600 PRINT "PLEASE PRESS <RETURN> TO CONTINUE.";
2610 GOSUB 2200:ON K$ <> RES GOTO 2610:RETURN
2700 VTAB 22:HTAB 1:PRINT LEFT$(Z$,79);:RETURN
2800 PRINT "<T>=TRY AGAIN <A>=ABANDON THIS WORD";
2810 GOSUB 2200:IF K$ <> "A" AND K$ <> "T" THEN 2810
2820 GOSUB 2700:RETURN
2900 FOR I = 1 TO GX:FOR J = 1 TO GY:T = ASC(P$(I,J))
2910 IF T > 128 THEN P$(I,J) = CHR$(T-128)
2920 NEXT J,I:FOR Z = 1 TO NW
2930 IF LEFT$(W$(Z),1) = RES THEN W$(Z) = MID$(W$(Z),2)
2940 NEXT Z:WF = 0:UW = NW-WP = 1:RETURN
3000 VTAB 22:HTAB 1
3010 PRINT "<SPACE BAR>=ANOTHER WORD <ESC>=MENU":RET
URN
3200 VTAB 21:HTAB 7:PRINT WP$;": ";
3210 IF LEFT$(W$(WP),1) <> RES THEN PRINT W$(WP);":":R
ETURN
3220 INVERSE:PRINT MID$(W$(WP),2);":":NORMAL:RETURN
4000 VX = DR(D,1):VY = DR(D,2)
4010 FIT = 1:NUMC = 0
4020 EX = X+VX*(LEN(NWS)-1):EY = Y+VY*(LEN(NWS)-1)
4030 IF X < 1 OR X > GX OR Y < 1 OR Y > GY OR EX < 1 O
R EX > GX OR EY < 1 OR EY > GY THEN FIT = 0:RETURN
4040 FOR Z = 1 TO LEN(NWS)
4050 TS = P$(X,Y):IF TS = "" THEN 4090
4060 IF ASC(TS) > 128 THEN TS = CHR$(ASC(TS)-128)
4070 IF TS = MID$(NWS,Z,1) THEN NUMC = NUMC+1:GOTO 409
0
4080 FIT = 0:Z = LEN(NWS)
4090 X = X+VX:Y = Y+VY:NEXT Z:RETURN
5000 VTAB 23:HTAB 1
5010 PRINT "MOVE CURSOR TO START AND PRESS <RETURN>.";
5020 GOSUB 6000:IF MF THEN RETURN
5030 BX = PX:BY = PY:VTAB 23:HTAB 1
5040 PRINT "MOVE CURSOR TO END AND PRESS <RETURN>.";
5050 GOSUB 6000:IF MF THEN RETURN
5060 EX = PX:EY = PY:VX = EX-BX
5070 VY = EY-BY:AX = ABS(VX):AY = ABS(VY)
5080 IF VY = 0 THEN SL = 0:GOTO 5100
5090 SL = VX/VY

```

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```

5100 IF (ABS(SL) = 0 OR ABS(SL) = 1) AND ((AX = LEN(NW
$)-1 OR AY = LEN(NWS)-1) OR QZ) THEN VX = SGN(VX):VY =
SGN(VY):EF = 0:RETURN
5110 GOSUB 2700:VTAB 22:HTAB 1
5120 PRINT "SORRY, I THINK YOU'VE MADE A MISTAKE."
5130 GOSUB 2800:IF QZ THEN GOSUB 3000
5140 ON K$ = "T" GOTO 5000:EF = 1:RETURN
6000 VTAB PY+3:HTAB PX+LM-1
6010 GOSUB 2200:IF K = 13 THEN MF = 0:RETURN
6020 IF NOT QZ OR (K <> 32 AND K <> 27) THEN 6070
6030 IF K = 27 THEN MF = 1:RETURN
6040 WP = WP+1:IF WP > NW THEN WP = 1
6050 VTAB 21:HTAB 7:PRINT LEFT$(Z$,33)
6060 GOSUB 3200:GOTO 6000
6070 IF K$ < "I" OR K$ > "L" THEN 6010
6080 PX = PX+(K$ = "L")-(K$ = "I")
6090 PY = PY+(K$ = "K")-(K$ = "I")
6100 PX = PX+GX*((PX = 0)-(PX = GX+1))
6110 PY = PY+GY*((PY = 0)-(PY = GY+1)):GOTO 6000
7000 DATA 0,-1,1,-1,1,0,1,0,1,-1,1,-1,0,-1,-1
8000 DATA 10,10,20,15,37,15

```

IBM PC & compatibles/Word Search

This program has been tested and found to work on the following computers and hardware configurations, using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter or Monochrome Printer card, w/Disk BASIC D2.00 or Advanced BASIC A2.00. IBM PCjr w/28K RAM, w/Cartridge BASIC J1.00. Tandy 1000 w/GW-BASIC 2.02 version 01.01.00.

```

10 DEFINT A-Z:KEY OFF:COLOR 7,0:LOCATE 1,1
20 WIDTH 80:WIDTH "LPT1:",81:RANDOMIZE TIMER
30 DIM DR(7,2),DM(3,2),CUS(26),MS(6)
40 FOR Z=0 TO 7:READ DR(Z,1),DR(Z,2):NEXT Z
50 FOR Z=1 TO 3:READ DM(Z,1),DM(Z,2):NEXT Z
60 FOR Z=1 TO 26:CUS(Z)="":NEXT Z
70 FOR Z=49 TO 54:MS(Z-48)=""<CHR$(Z)>":NEXT Z
80 GOSUB 2000:PRINT "<1> Small (10 x 10)"
90 PRINT "<2> Medium (20 x 15)"
100 PRINT "<3> Large (40 x 15)":PRINT
110 PRINT "Which size puzzle do you want to create?"
120 GOSUB 2100:K=K-48:IF K<1 OR K>3 THEN 120
130 GX=DM(K,1):GY=DM(K,2):WL=GX+GY
140 DIM P$(GX,GY),W$(WL):BK$=CHR$(219):SP$=CHR$(32)
150 RES=CHR$(13):LM=40-GX/2:NW=0:GOSUB 2000
160 PRINT "Would you like to see the puzzle as it's be
ing built?":GOSUB 2200
170 SP=(K$="Y"):GOSUB 2000:IF SP THEN GOSUB 2400
180 LOCATE 21,1:PRINT "What is your word? ";
190 LINE INPUT WD$:T=LEN(WD$):GOSUB 2600
200 IF SCREEN(1,35)=87 THEN 220
210 GOSUB 2000:IF SP THEN GOSUB 2500
220 IF T=0 THEN IF NW>0 THEN 760 ELSE 180
230 IF T<=GX THEN 260
240 LOCATE 22,1
250 PRINT "That word is too long to fit.":GOTO 310
260 NWS="":EF=0:FOR Z=1 TO T:K=ASC(MID$(WD$,Z,1))
270 IF K<65 OR (K>90 AND K<97) OR K>122 THEN EF=-1:Z=T
:GOTO 290
280 NWS=NWS+CHR$(K+32*(K>96))
290 NEXT Z:IF NOT EF THEN 320
300 LOCATE 22,1:PRINT "That word contains nonalphabeti
c characters."
310 GOSUB 2700:GOSUB 2800:GOTO 180
320 IF NW=0 THEN 350
330 JF=0:FOR Z=1 TO NW:IF NWS=W$(Z) THEN JF=-1:Z=NW
340 NEXT Z:IF JF THEN 180
350 MAXC=0:FLL=0:FOR P=1 TO LEN(NWS)
360 CL=ASC(MID$(NWS,P,1))-64:IF CUS(CL)="" THEN 470
370 FOR CORR=1 TO LEN(CUS(CL)) STEP 2
380 CX=ASC(MID$(CUS(CL),CORR,1))
390 CY=ASC(MID$(CUS(CL),CORR+1,1))
400 FOR D=0 TO 7:CD=(D+4) MOD 8
410 BX=CX+DR(CD,1)*(P-1):BY=CY+DR(CD,2)*(P-1)
420 X=BX:Y=BY:GOSUB 4000
430 IF NOT FIT THEN 460
440 FFL=-1:IF NUMC<MAXC THEN 460
450 MAXC=NUMC:WX=BX:WY=BY:WD=D
460 NEXT D,CORR

```

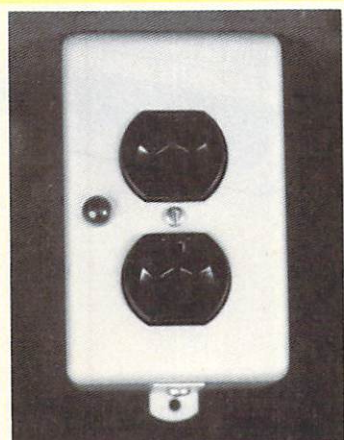
```

470 NEXT P
480 IF FFL THEN X=WX:Y=WY:D=WD:GOTO 650
490 FOR T=1 TO 100:D=INT(RND*8)
500 BX=RND*(GX-1)+1:BY=RND*(GY-1)+1
510 X=BX:Y=BY:GOSUB 4000:IF FIT THEN T=100
520 NEXT T:IF FIT THEN X=BX:Y=BY:GOTO 650
530 GOSUB 2600:LOCATE 22,1
540 PRINT "I can't seem to fit ";
550 PRINT CHR$(34);NWS;CHR$(34);" in."
560 IF NOT SP THEN GOSUB 2700:GOSUB 2800:GOTO 180
570 PRINT "Would you care to try?"
580 GOSUB 2200:GOSUB 2600:IF K$="N" THEN 180
590 PX=1:PY=1:GOSUB 5000:IF EF THEN 180
600 X=BX:Y=BY:GOSUB 4010
610 IF FIT THEN X=BX:Y=BY:GOTO 660
620 GOSUB 2600
630 LOCATE 22,1:PRINT "Sorry, but that doesn't fit."
640 GOSUB 2900:IF K$="A" THEN 180 ELSE 590
650 VX=DR(D,1):VY=DR(D,2)
660 NW=NW+1:W$(NW)=NWS:FOR Z=1 TO LEN(NWS)
670 P$(X,Y)=MID$(NWS,Z,1):LP=ASC(P$(X,Y))-64
680 IF LEN(CUS(LP))=254 THEN CUS(LP)=RIGHT$(CUS(LP),25
2)
690 CUS(LP)=CUS(LP)+CHR$(X)+CHR$(Y)
700 IF SP THEN LOCATE Y+3,X+LM-1:PRINT P$(X,Y)
710 X=X+VX:Y=Y+VY:NEXT Z
720 GOSUB 2600:IF NW<WL THEN 180
730 LOCATE 21,1
740 PRINT "I don't have space for any more words."
750 GOSUB 2700
760 FOR I=1 TO GX:FOR J=1 TO GY
770 IF P$(I,J)="" THEN P$(I,J)=CHR$(INT(RND*26)+65)
780 NEXT J,I
790 QF=-1:WF=0:UW=NW:WP=1
800 GOSUB 2000:PRINT "Would you like to ..."
810 PRINT:PRINT:C=1:IF WF=0 THEN 850
820 PRINT MS(C);"continue playing where you left off,"
830 C=C+1:PRINT MS(C);"play again from the beginning,"
840 C=C+1:GOTO 860
850 PRINT MS(C);"play your puzzle on-screen,":C=C+1
860 PRINT MS(C);"print your puzzle out (along with a w
ord list),":C=C+1
870 PRINT MS(C);"print out a word list for reference,"
880 C=C+1
890 PRINT MS(C);"leave this puzzle and make another, o
r"
900 C=C+1:PRINT MS(C);"quit?"
910 GOSUB 2100:S=K-48:IF S<1 OR S>5-(WF>0) THEN 910
920 GOSUB 2000:IF WF=0 THEN 950
930 IF S=2 THEN GOSUB 3000
940 S=S+(S<1)
950 ON S GOTO 960,1270,1270,1360,1380
960 GOSUB 2500:PX=1:PY=1
970 LOCATE 20,1
980 PRINT "You have yet to find";UW;"word(s). "
990 GOSUB 3100:LOCATE 21,1:PRINT "Word #":GOSUB 3200
1000 GOSUB 5000:IF EF THEN 1000
1010 IF MF THEN 800
1020 WSS="":X=BX:Y=BY
1030 TS=P$(X,Y)
1040 IF ASC(TS)>128 THEN TS=CHR$(ASC(TS)-128)
1050 WSS=WSS+TS
1060 IF X<>EX OR Y<>EY THEN X=X+VX:Y=Y+VY:GOTO 1030
1070 Z=1
1080 IF LEFT$(W$(Z),1)=RES AND MID$(W$(Z),2)=WSS THEN
1140
1090 IF W$(Z)=WSS THEN 1170
1100 Z=Z+1:IF Z<=NW THEN 1080
1110 GOSUB 2800:LOCATE 22,1
1120 PRINT "Sorry, but that word isn't in the list."
1130 GOTO 1160
1140 GOSUB 2800:LOCATE 22,1
1150 PRINT "Sorry, you've already found that word."
1160 GOSUB 2700:GOSUB 2800:GOSUB 3100:GOTO 1000
1170 W$(Z)=RES+W$(Z):X=BX:Y=BY:COLOR 0,15
1180 T=ASC(P$(X,Y))
1190 IF T>128 THEN T=T-128 ELSE P$(X,Y)=CHR$(T+128)

```


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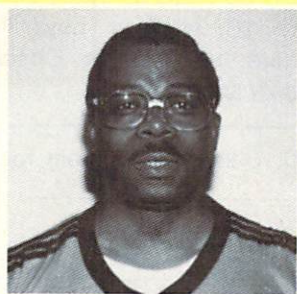
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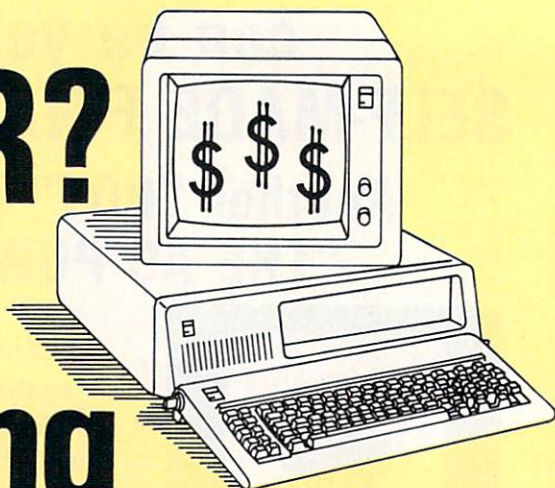


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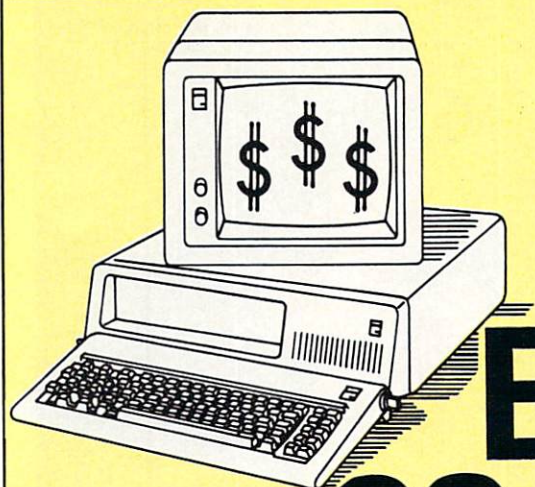
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“What’s wrong with copying software?”

“I use a lot of programs on my personal computer, and I copy them all the time.”

“I’m a programmer. Every time you copy one of my programs, you’re taking away my income—I depend on *sold* programs for a living.”

“Oh, come on. I bought it: I have a right to copy it.”

“You *do* have a right to make a back-up, that’s true. But when you start copying programs for your friends and co-workers, that’s breaking the law.”

“What law? Any copying I do is in the privacy of my own home.”

“It doesn’t make any difference where you do it. Every time you copy a program without permission from the publisher, you’re committing a federal offense.”

“That’s all right, I won’t get caught.”

“You’re missing the point. The issue isn’t “What can I get away with?”—it’s “who am I hurting?”


Remember, lots of people worked hard to produce every program you use: designers, programmers, distributors, retailers, not to mention all the people who support users. They have a *right* to be compensated for their efforts, and their major compensation is through software sales.”

“Well, I don’t mean to hurt all those people—or anyone, really.”

“Unfortunately, that’s what copying does: it hurts people. And, ultimately, it hurts people like you, who want new and innovative software.”

**Do you copy software?
Think about it.**

The unauthorized copying of software is a crime.

SPA  Software Publishers Association
Suite 1200
1111 19th Street, N.W.
Washington, D.C. 20036


```

1200 LOCATE Y+3,X+LM-1:PRINT CHR$(T)
1210 IF X<>EX OR Y<>EY THEN X=X+VX:Y=Y+VY:GOTO 1180
1220 COLOR 7,0:WF=WF+1:UW=NW-WF:IF UW>0 THEN 970
1230 GOSUB 3000:LOCATE 20,1:PRINT STRING$(80,32)
1240 GOSUB 2600:LOCATE 22,1
1250 PRINT "Congratulations! You've solved the puzzle."
"
1260 GOSUB 2700:GOTO 790
1270 PRINT "Press any key when printer is ready."
1280 GOSUB 2300:LPRINT:IF S=3 THEN 1330
1290 FOR I=1 TO GY:FOR J=1 TO GX
1300 T=ASC(P$(J,I)):IF T>128 THEN T=T-128
1310 LPRINT CHR$(T);SP$;:NEXT J:LPRINT:NEXT I
1320 LPRINT:LPRINT
1330 FOR Z=1 TO NW:TS=W$(Z)
1340 IF LEFT$(TS,1)=RE$ THEN TS=MID$(TS,2)
1350 LPRINT TS:NEXT Z:GOTO 800
1360 PRINT "Are you sure you want to start again?"
1370 GOSUB 2200:IF K$="N" THEN 800 ELSE RUN
1380 PRINT "Are you sure you want to quit?"
1390 GOSUB 2200:IF K$="N" THEN 800 ELSE CLS:END
2000 CLS:PRINT TAB(34);"*Word Search*":PRINT:RETURN
2100 K$=INKEY$:IF K$="" THEN 2100
2110 K=ASC(K$):RETURN
2200 GOSUB 2300
2210 IF K$<>"Y" AND K$<>"N" THEN 2200 ELSE RETURN
2300 GOSUB 2100:IF K>96 THEN K=K-32
2310 K$=CHR$(K):RETURN
2400 PRINT TAB(LM-1);STRING$(GX+2,BK$)
2410 FOR Z=1 TO GY:PRINT TAB(LM-1);BK$;SPC(GX);BK$
2420 NEXT Z:PRINT TAB(LM-1);STRING$(GX+2,BK$):RETURN
2500 GOSUB 2400:FOR I=1 TO GY:LOCATE I+3,LM
2510 FOR J=1 TO GX:TS=P$(J,I)
2520 IF TS="" THEN PRINT SP$;:GOTO 2550
2530 T=ASC(TS):IF T<128 THEN PRINT TS;:GOTO 2550
2540 COLOR 0,15:PRINT CHR$(T-128);:COLOR 7,0
2550 NEXT J,I:RETURN
2600 LOCATE 21,1:PRINT STRING$(240,32);:RETURN
2700 PRINT "Please press <ENTER> to continue.";
2710 GOSUB 2300:IF K$<>RE$ THEN 2710 ELSE RETURN
2800 LOCATE 22,1:PRINT STRING$(159,32);:RETURN
2900 PRINT "Press <T> to try again, or <A> to abandon
this word."
2910 GOSUB 2300:IF K$<>"A" AND K$<>"T" THEN 2910
2920 GOSUB 2800:RETURN
3000 FOR I=1 TO GX:FOR J=1 TO GY:T=ASC(P$(I,J))
3010 IF T>128 THEN P$(I,J)=CHR$(T-128)
3020 NEXT J,I:FOR Z=1 TO NW
3030 IF LEFT$(W$(Z),1)=RE$ THEN W$(Z)=MID$(W$(Z),2)
3040 NEXT Z:WF=0:UW=NW-WF:WP=1:RETURN
3100 LOCATE 22,1:PRINT "Press <SPACE BAR> to display a
nother word; <ESC> for menu.":RETURN
3200 LOCATE 21,7:PRINT MID$(STR$(WP),2);": "
3210 IF LEFT$(W$(WP),1)<>RE$ THEN PRINT W$(WP);":":RET
URN
3220 COLOR 0,15:PRINT MID$(W$(WP),2);":."
3230 COLOR 7,0:RETURN
4000 VX=DR(D,1):VY=DR(D,2)
4010 FIT=-1:NUMC=0
4020 EX=X+VX*(LEN(NW$)-1):EY=Y+VY*(LEN(NW$)-1)
4030 IF X<1 OR X>GX OR Y<1 OR Y>GY OR EX<1 OR EX>GX OR
EY<1 OR EY>GY THEN FIT=0:RETURN
4040 FOR Z=1 TO LEN(NW$)
4050 TS=P$(X,Y):IF TS="" THEN 4090
4060 IF ASC(TS)>128 THEN TS=CHR$(ASC(TS)-128)
4070 IF TS=MID$(NW$,Z,1) THEN NUMC=NUMC+1:GOTO 4090
4080 FIT=0:Z=LEN(NW$)
4090 X=X+VX:Y=Y+VY:NEXT Z:RETURN
5000 LOCATE 23,1
5010 PRINT "Place cursor at start position and press <
ENTER>."
5020 GOSUB 6000:IF MF THEN RETURN ELSE BX=PX:BY=PY
5030 LOCATE 23,1
5040 PRINT "Place cursor at end position and press <EN
TER>."
5050 GOSUB 6000:IF MF THEN RETURN ELSE EX=PX:EY=PY
5060 VX=EX-BX:VY=EY-BY:AX=ABS(VX):AY=ABS(VY)

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5070 IF VY=0 THEN SL!=0 ELSE SL!=VX/VY
5080 IF (ABS(SL!)=0 OR ABS(SL!)=1) AND ((AX=LEN(NW$)-1
OR AY=LEN(NW$)-1) OR QF) THEN VX=SGN(VX):VY=SGN(VY):E
F=0:RETURN
5090 GOSUB 2800:LOCATE 22,1
5100 PRINT "Sorry, I think you've made a mistake."
5110 GOSUB 2900:IF QF THEN GOSUB 3100
5120 IF K$="T" THEN 5000 ELSE EF=-1:RETURN
6000 LOCATE PY+3,PX+LM-1
6010 LOCATE ,1:GOSUB 2300:LOCATE ,0
6020 IF K=13 THEN MF=0:RETURN
6030 IF NOT QF OR (K<>32 AND K<>27) THEN 6080
6040 IF K=27 THEN MF=-1:RETURN
6050 WP=WP MOD NW+1
6060 LOCATE 21,7:PRINT STRING$(50,32)
6070 GOSUB 3200:GOTO 6000
6080 IF K$<"I" OR K$>"L" THEN 6010
6090 PX=PX+(K$="J")-(K$="L"):PY=PY+(K$="I")-(K$="K")
6100 PX=PX+GX*((PX=GX+1)-(PX=0))
6110 PY=PY+GY*((PY=GY+1)-(PY=0)):GOTO 6000
7000 DATA 0,-1,1,-1,1,0,1,0,1,-1,1,-1,0,-1,-1
8000 DATA 10,10,20,15,40,15

```

```

Y Y O S A I L Z X Z B E A U L R O Q W N
V E H C A E B J W J X C A Q O X V E Q H
A X C R E N A R A B N U W R E A A L V Q
U T K A Z A D X A G P N O B O C M T H F
N T N B W I N D S U R F E R D P J W T I
G Z I S P A O W Q U F R Q N U D R Z B H
U P Y S N G T E B V N T J O M R Z T Q L
W K R T F V C E C U U B Q X R G T V D G
M U V A N U M B R E L L A N V C U S X U
D Y T O U W I C H S Y X Z T T Z G H T I
Z W G M Y A Y O U B K F K U H H C J G R
S N O G H J H N W P L I Y W Y E C T L A
W X Z L Q V T O Z C W A I X P G X Y R M
N S P Q Q G E X F I U U V Z N M U S V S
P R Q L W W F H P X O S K G U U B X E D

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 OCEAN
 SAND
 WINDSURFER
 CRABS
 SAIL
 WATERSKI
 SUNBATHE
 BURN
 UMBRELLA

Look for the last signs of summer in this printout from *Word Search*, above.

TIPS TO THE TYPIST

Typing BASIC programs from FAMILY COMPUTING is a great way to learn about programming and get some free software to boot! But it's frustrating to type in a long program, only to find it doesn't work as it should. If you're new to typing in programs, here are some tips to help make your first experiences rewarding ones.

BEFORE TYPING IN A PROGRAM

- Check to see if it will run on your computer under a version of BASIC you have available. Also check to see if special hardware—a disk drive, joysticks, or a printer, for example—is required. Unless the program heading indicates otherwise, you can assume that a program will run under any standard version of BASIC on any standard hardware configuration of your machine, with these exceptions:

- "Apple II series" programs will run under Applesoft BASIC on the Apple II plus (w/language card), IIe, and IIc. Programs requiring a disk drive will work equally well under DOS 3.3 or ProDOS.

- Compatibility of IBM BASIC programs is determined by both the hardware and the version of BASIC used. Our "IBM PC & compatibles" programs are composed on IBM PCs & PCjr's and tested under most versions of BASIC available for those machines. They are then tested on a variety of IBM-compatible machines under the versions of BASIC supplied with them. Each IBM PC & compatibles program listing is supplemented by a rundown of the machines and versions of BASIC under which the program is guaranteed to work. Most programs will probably run on many other PC compatibles and under other versions of BASIC.

- TI programs not marked "w/TI Extended BASIC" should be run under standard (console) TI BASIC.

- If you have a disk drive, prepare ("format" or "initialize") a disk so you can save the program once you're finished typing. Your DOS (Disk Operating System) manual or disk-drive manual will tell you how.

- Get your version of BASIC fired up and ready. Read the introductory chapters of your BASIC manual for instructions.

WHILE TYPING, KEEP IN MIND THAT . . .

- BASIC programs consist of "lines," each beginning with a line number (Macintosh BASIC "lines" don't need line numbers), containing letters, numbers, and punctuation marks of various kinds. Each "line" may be composed of several "statements"—instructions that tell the computer to perform various actions—and may continue over several physical lines on the page and/or on your screen.

When typing in a BASIC program, forget considerations of format and get the *content* of what you type to match the *content* of what you see on the printed page. Regardless of how margins may break up a program "line," it hasn't ended until you reach another line number or the end of the program listing. Begin typing with

the line number, then continue on, typing every letter, number, space, and punctuation mark in the order it appears, ignoring margins. Where the "line" ends, there will usually be some trailing spaces (which you don't have to type in), followed by the next line number at the left margin of the listing. At this point, all you have to do is press the RETURN or ENTER key to register the "line" in memory, then continue with the next "line."

AFTER YOU'VE FINISHED . . .

- Just type RUN and press RETURN or ENTER. If you've typed everything correctly, the program should work as described.

- Of course, it almost never does, not even for seasoned programmers. Typing in a program and having it run off the bat qualifies as a small miracle. Usually there are one or more mistakes, major or minor, that have slipped past your careful scrutiny and are causing your computer to do unexpected things. Not to worry. Now comes what some people consider the most enjoyable part of the programming process: a procedure called "debugging"—finding and eliminating your mistakes. To review portions of your program on the computer screen, use the LIST command as explained in your BASIC manual. If you have a printer, you might find it more convenient to print out what you've typed (check your manual for the appropriate command). Look over each section of the program carefully, preferably with someone else's help. Make sure you haven't dropped a line or a character, miscounted spaces between a pair of quotes, mistaken a comma for a period, mixed up an "O" and a zero, or (most likely) all of the above. When you find a mistake, retype the offending line from the original listing, including the line number, and press RETURN or ENTER as explained above.

- Naturally, mistakes tend to occur more frequently in certain areas of a program than in others. Complicated equations are easy to foul up by dropping or mismatching parentheses or math symbols. Data statements—program lines beginning with the usual number, followed by the word DATA—are another popular trouble spot. Check them carefully. And, of course, remember to SAVE a copy of the corrected program when you're finished.

- Each computer has its own commands and keys for program "editing," and your user's manual will tell you how to use them. Besides the editing keys, there are two sure-fire ways of correcting errors in a BASIC program line. If you're just typing along and make a mistake, press the backspace-delete key (the back-arrow key on most systems) to rub out the offending character, and then continue typing. Once you've pressed RETURN or ENTER to register the line, mistakes are a little harder to fix. You must use the editing keys or type the line in again from the beginning (including the line number) and press RETURN or ENTER. The new line will replace the old one with the same line number in your computer's memory. This option is a little more work, but foolproof.

Good luck!

PROGRAMMING P.S.

Enhancements to Previous Months' Programs

Mortgage Renegotiation Analysis (July 1986, page 15)

IBM PC & compatibles: A recent IRS ruling may affect the deductibility of "points" charged up-front for renegotiation of a mortgage. Prior to this ruling, "points" could be deducted immediately if a mortgage was financed for a principal place of residence (i.e., your everyday house, not your weekend ski retreat in Vail). Otherwise, they had to be deducted in even installments and spread out over the term of the new mortgage. By asking "Is this mortgage on your principal residence?" the program determined the proper way of handling "point" deductions.

Now, the IRS has ruled that in most cases, points should be deducted over the term of a mortgage. This ruling is sure to be appealed. But until the law is settled on this issue, it's probably wise to run *Mortgage Renegotiation Analysis* at least twice while examining any mortgage option to which the ruling may apply. In the first run, answer *yes* to the question "Is this mortgage on your principal residence?" This will cause points to be treated as immediate deductions. In the second run, answer *no* to make the program deduct points evenly over the new mortgage term. Compare the results, and be sure to consult your financial adviser before making a final decision.

COMPUTERS WE COVER

We regularly present two or more programs in each issue for the Apple II series; Atari 400/800, 600/800XL, & 130XE; Commodore 64 & 128 (in C 64 mode); IBM PC and compatibles; Macintosh; and Tandy Models III/4 and Color Computer. However, occasionally we have to omit versions when a program requires capabilities that some of these computers lack. For example, we usually won't run a Tandy Model III or 4 version of a program featuring sound and/or color graphics. And many Microtones programs can only run on computers that have three voices, which eliminates the Apple II series; IBM PC and compatibles (except the PCjr with Cartridge BASIC and the Tandy 1000); and Tandy Models III, 4, and Color Computer.

In addition, we publish at least one program each issue for the Adam, TI-99/4A, and VIC-20. In the future, we also hope to cover the Atari 520ST and the Amiga. This month, these programs can be found here in *The Programmer* and in *Microtones* and *Compucopia* (in the K-POWER section of *FAMILY COMPUTING*).

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†Note: CP/M, Pascal and PFS-WRITE-DOS versions do not suggest correct spelling of words or allow immediate correction of misspellings.

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- A-13 Ulysses & the Golden Fleece
- A-15 Passport to London
- A-16 Passport to Paris

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- A-35 Checkbook Balancer
- A-36 JBase

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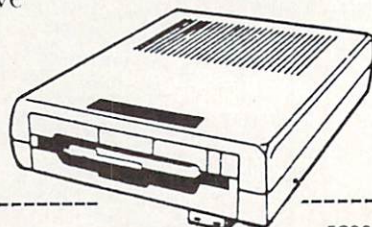
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- A-59 Baby Animals
- A-60 Hoppy the Curious Kangaroo

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This Month!!

GAME STRATEGY, page 78
MICROTONES, page 81
COMPUCOPIA, page 83
CONTEST, page 83

Edited by Bernadette Grey

See Your
Name in Lights
with Marquee Page 83

K-POWER

FOR THE COMPUTER GENERATION



Adam Marsh: writer and programmer

Marsh and Mumford: A Dynamic Duo Takes On Vicious Vocabulary To Find Fame and Fortune



Stephen Mumford: the artist

The first time Adam Marsh took the verbal portion of the SAT (Scholastic Aptitude Test), he wondered if some of the vocabulary words came from a foreign language. How many seventh graders know words like *eschew*, *somnambulist*, or *peccadillos*?! How many adults know them?!!

Marsh, 17, who lives in Delaware, knew that other college-bound teenagers were boggled by crazy SAT words. So when he decided to enter the national Apple Computer Club Competition '85, he tackled the task of making vocabulary words easy—even fun—to learn.

He teamed up with his artistic friend Stephen Mumford, of Ocean City, Maryland, and the two boys (then 15) created *The Illustrated SAT*, a humorous yet effective pro-

gram and booklet that teaches SAT vocabulary. Marsh wrote the BASIC program, while Mumford created the illustrated booklet, using an Apple IIe and a mouse. Their creation won second place in the national competition! And that's just the beginning.

Marsh and Mumford decided that *The Illustrated SAT* was worth more than the fame that the Apple Computer Club competition brought to them. They wanted to launch a company to sell their program commercially. So they marched down to the bank and secured a \$15,000 line of credit, called a lawyer and an accountant, and formed a company called Marsh and Mumford, based in Berlin, Maryland. The boys claim the title of the "youngest people to get Choice, Visa, and MasterCard credit

lines in the state of Maryland."

Marsh and Mumford say they were able to successfully develop an instructional SAT package because they "know the feeling of utter dread caused by the test and its 'concatenation' of vocabulary words."

And they believe that they can help with another cause: campaigning against illegal copying of software. A couple of months ago, Apple Computer announced that the dynamic duo has won Competition '86 with a comic book that discourages hackers from pirating software. However, unlike *The Illustrated SAT*, the boys don't plan to sell their comic book through Marsh and Mumford. "Instead, we'd like to get one of the big publishers to handle it," said Marsh. Stupendous!

Ludicrous Lingo and Opinion Poll Contest Winners!

Last March we asked K-POWER readers to put on their bad-joke caps and enter the Ludicrous Lingo Contest. Well, more than 400 readers sent us their jokes and, boy, they were baaaadd!!! Our three Ludicrous Lingo contest winners (who each won \$25) are **Christine Foret**, 17, *Mathews, Louisiana*; **Jason Mariner**, 15, *Groton, Connecticut*; and **Kenny Carr**, 12, *New Haven, Michigan*. Try these jokes on your friends. Or maybe you shouldn't.

Christine: How does a computer seek revenge?

Special Ks: How?

Christine: It puts a cursor on you.

Jason: Did you see the movie about the two computers that fell in love?

Special Ks: No, what's it called?

Jason: "Terminals of Endearment."

Kenny: Did you hear that I couldn't get in to see the computer's menu?

Special Ks: Why not, Kenny?

Kenny: Because I wasn't wearing the proper Atari!

Then in April, you all took off your bad-joke caps and got serious. (We were amazed!!!) We asked you for your opinions of K-POWER for our annual Opinion Poll Contest. So you rated each section of K-POWER on a scale of 1-5: 5-love it; 4-pretty good; 3-good; 2-could live without it; 1-don't bore me with this anymore.

This is how you rated K-POWER:

HINT HOTLINE	4.5	SOFTWARE	
STRATEGY	4.3	SCOOP	3.6
CONTEST	4.25	MICRONOTES	3.4
COMPUCOPIA	4.1	NEWS ABOUT	
MICROTONES	3.99	KIDS	3.3
LOGON	3.7	NEWS ABOUT	
DR. KURSOR'S		DESIGNERS	3.2
KLINIC	3.7		

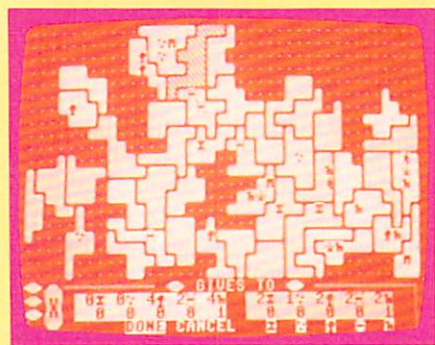
We're sending \$15 each to **Steve Walker**, 12, *Fridley, Minnesota*, **Daniel Heffelfinger**, 13, *Allentown, Pennsylvania*, and **Michael Mast**, 16, *Clarence Center, New York*, because we picked their contest responses out of our trustworthy SPECIAL-K hat. Congratulations!

STRATEGY

TIPS, TRICKS, AND HINTS

LORDS OF CONQUEST

Electronic Arts. Tactical/strategy. Your mission: Conquer the world by capturing individual countries or building between three and six cities before your opponent(s) do. Success depends on the effective use of resources available to you (wood, coal, iron, gold, and horses). You can form trade and military alliances with your opponents, but watch out, because no treaty lasts forever (hints and game for C 64).

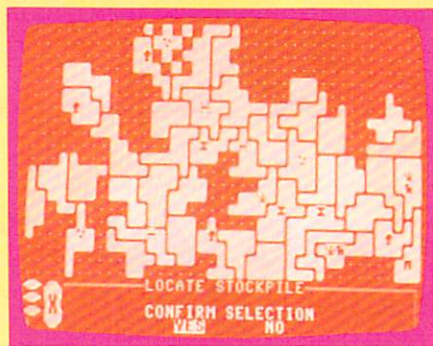


When you trade a horse to someone, you'll notice that the other player gets to choose where he or she wants to place the horse. The trick is that if you both have horses in bad locations, you can trade them off to each other. Thus you can relocate your horses to a location where you want them.

It's not the quantity of countries you have, but the quality that counts. If you can build up a small cluster of heavily defended countries, you are better off than if you have many weaker countries.

In the beginning of the game, locate your stockpile on some isolated peninsula or island that's completely under your control. As soon

as an opponent has built a ship, however, be sure to move it to a safe inland area.



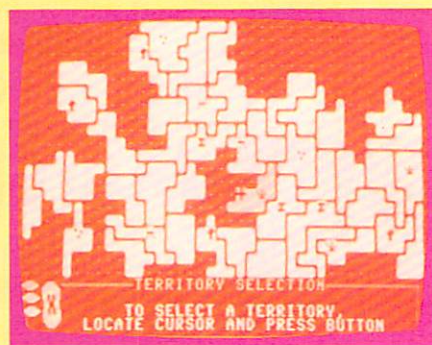
Don't end up with your countries spread thinly across the map. Try to get most of your countries in a solid block surrounding your resources. However, if the last of a resource that you don't have (except pastures) is nowhere near the rest of your countries, take it anyway; you really can't get along without at least one of everything. Also, don't put yourself in the middle of your opponents; try to keep your back to an edge of the map.

After the first year, it's usually wiser to build a city rather than a weapon. If your opponent opts to make a weapon, he might have the advantage for a year or two, but your increased production will soon make up for it (especially if you are doubling both iron and coal).

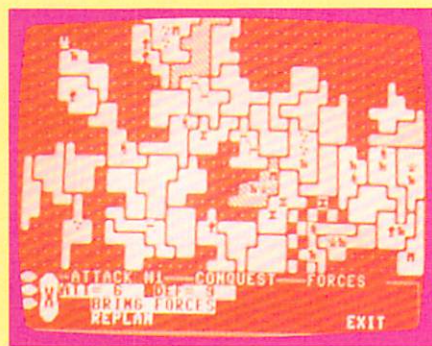
Learn how to tally force counts in your head. If you're playing a multi-player scenario, you may give away your strategy by using the built-in force counter.

Unlike horses and weapons, boats can be stacked on a country (as long as the coastline allows). You can heavily fortify a country in this way, making it almost invulnerable

to attack. If a country has a very small coastline (one or two squares), you can easily fill all the ports with boats, making it practically immune to naval assaults.



When choosing territories, go for pastures first, especially ones near groups of other resources. Regions rich in resources are prime city-building sites, and the nearby horse(s) will help you gain and keep control of them.

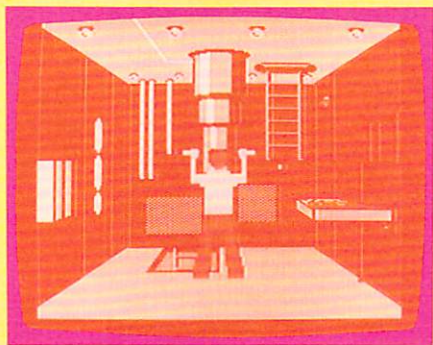


You can greatly increase your offensive punch by placing horses and weapons in your border countries and in countries that are one place removed from your border. Then when you attack an area, you can bring your horse and weapon from the rear of your forces, adding four force points to every attack you make.—SPECIAL KS

SILENT SERVICE

Simulation. MicroProse. Your mission: As commander of an American submarine in the Pacific during World War II, you must hunt down and sink Japanese freighters, troop carriers, and tankers (hints and game for Apple and C-64).

Ships are slowed down considerably when hit by a single torpedo. When attacking a convoy, select



the juiciest target, and fire a single torpedo before diving. Dive deep enough to avoid being detected by any destroyers and continue at two-thirds speed in the same direction as the convoy. Destroyers will usually abandon the wounded ship in order to protect the remaining convoy. Speed up the simulation until the convoy is well out of range, and keep observing the abandoned ship on radar. Then surface to torpedo depth



Flight Simulator II Scenery Disks

The Challenge of Accomplished Flight

With a realism comparable to (and in some ways even surpassing) \$100,000 aircraft flight simulators, Flight Simulator II includes full flight instrumentation and avionics, and provides a full-color out-the-window view. Instruments are arranged in the format standard to modern aircraft. All the radios needed for IFR flight are included. Front, rear, left, right, and diagonal views let you look in any direction. Program features are clearly documented in a 96-page Pilot's Operating Handbook.

For training in proper flight techniques, Flight Simulator II includes another 96-page instruction manual, compiled by two professional flight instructors with over 8,000 hours flight time and 12,000 hours of aviation teaching experience. You'll learn correct FAA-recommended flight procedures, from basic aircraft control through instrument approaches. To reward your accomplishments, the manual even includes a section on aerobatic maneuvers.

The Realism and Beauty of Flight

Go sight-seeing over detailed, realistic United States scenery. High-speed graphic drivers provide an animated out-the-window view in either day, dusk, or night flying modes.

Flight Simulator II features over 80 airports in four different scenery areas: New York, Chicago, Seattle, and Los Angeles. Six additional Scenery Disks covering the entire Western half of the United States are now available in IBM and C64/128 disk formats.

Apple and Atari versions will be released soon. Each disk covers a geographical region of the country in detail, and is very reasonably priced.

The Pure Fun of "World War I Ace"

When you think you're ready, you can test your flying skills with the "World War I Ace" aerial battle game. This game sends you on a bombing run over heavily-defended enemy territory. Six enemy fighters will attempt to engage you in combat as soon as war is declared. Your aircraft can carry five bombs, and your machine guns are loaded with 100 rounds of ammunition.

See Your Dealer. Flight Simulator II is available on disk for the Apple II, Atari XL/XE, and Commodore 64/128 computers for \$49.95. Scenery Disks for the C64 and IBM PC (Jet or Microsoft Flight Simulator) are \$19.95 each. A complete Western U.S. Scenery six-disk set is also available for \$99.95. For additional product or ordering information, call (800) 637-4983.

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(10-20 feet underwater) and strike again.

🔑 A few hits from the deck gun will slow down any ship and cause it to fall behind the convoy.

🔑 Sometimes a convoy will head for land and remain a few hundred yards off shore. The ships will form a relatively tight circle and continue to circle while the destroyers (the fastest blips on the radar) move in random directions. You can creep up on the convoy with a submarine,

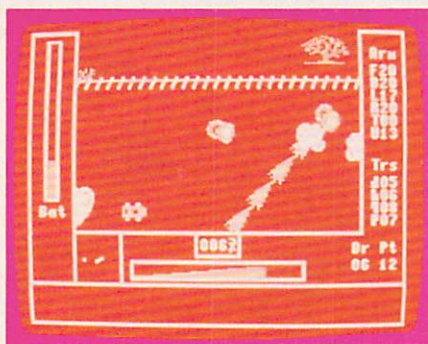
making sure to use the slowest possible speed and minimum profile. Position the sub fairly close to the convoy, while remaining close to the bottom. If detected by the destroyers, dive to the bottom and shut off the engines. The destroyers cannot detect a sub that rests on the bottom unless it happens to be in very shallow waters (under 100 feet). Ships can be picked off one at a time by surfacing to periscope level and firing no more than two torpedoes at a time. Be sure the destroy-

ers are on the other side of the circle before firing.

🔑 If a convoy is guarded by only one destroyer, it might be worth your while to try to sink it. However, make sure that you shoot at the destroyer before attacking the other ships in the convoy. When it starts closing in on you, open up with the deck gun (especially effective at shorter ranges—around 1,000 yards).—GEORGE HULSEMAN, 20, Easton, Maryland; CHRIS BARNES, 13, Bismarck, North Dakota

H I N T H O T L I N E

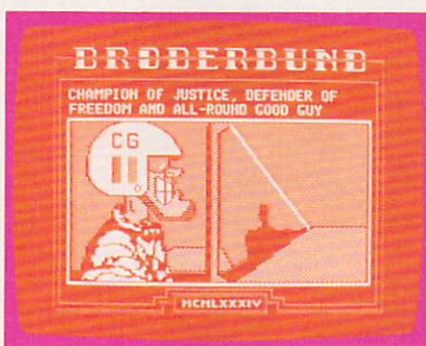
AUTODUEL Origin Systems (Apple). Role-playing arcade/adventure. Your mission: Survive on the highways of the future, "where the right of way goes to the biggest guns."



🔑 In some versions of the game, if you're in a town without a garage, you can go to any adjacent city by bus and bring your car with you. Simply go to the Truck Stop and take the bus. When you're asked if you want to leave your car on the streets, hit the spacebar. You and your car will arrive at your destination.—DAN ROBINSON, 13, Severna Park, Maryland; DAVID KISLIN, 14, and YARIV SHUTZER, 15, Secaucus, New Jersey.

CAPTAIN GOODNIGHT AND THE ISLANDS OF FEAR, Broderbund (Apple). Arcade/adventure. Your mission: With infinite courage, and a competition model yo-yo, you must stop the wicked Dr. Maybe.

🔑 Tired of seeing the world blow up, time and time again? Follow these instructions to get over 99 hours to complete your mission: Kill



yourself until you have about an hour and five minutes left, and kill yourself again. Then hold down the "T" key (the repeat key if you use an Apple II+). The time should go past zero and roll over to 99 hours. If you fail the first couple of times, keep trying. You'll get it.—KEN LEE, 13, Fenton, Michigan.

We need a few good hints! Help K-POWER readers be all that they can be by sending us hints for your favorite games. We have all the *Zork* and *Ultima III* hints we can handle, but we'll gladly publish and pay \$10 for hints we've not heard of. Send them to Hint Hotline, c/o K-POWER, 730 Broadway, New York, NY 10003. Hints will not be considered for publication unless accompanied by full name (no aliases, please), address, telephone number, and date of birth. Stumped gamers can send in their questions to the same address. We'll try to answer them in upcoming issues. (Note: The computer systems listed in parentheses indicate the computer versions the hints work for.)

Q & A

In King's Quest II (Sierra On-Line), how do I get by the ghoul without giving him the brooch, earring, or bracelet?—NEAL GAYNOR, 12, South Holland, Illinois

Try wearing what you find underneath Grandma's bed.

In King's Quest II, how do I unlock the chest in Dracula's tower?—ROBERT KELLY, 12, Mendham, New Jersey

You need the silver key that you get if you kill Dracula in his coffin. To do this, you must have the stake and mallet.

In Ultima II (Sierra-On-Line), where do I find the quicksword?—CHRIS LUNDEEN, 14, Springfield, Virginia

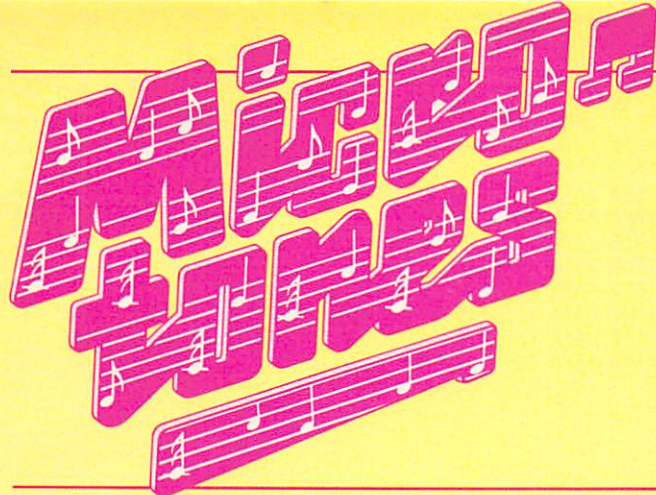
The fighter imprisoned in New San Antonio has it. You must offer him at least 500 gold pieces.

In Ultima IV (Origin Systems, distributed by Electronic Arts) how do you get to Lock Lake?—PAUL WASSERZIEHER, 12, Anchorage, Alaska

We know of two ways to get to Lock Lake: 1) You need the balloon found outside the exit of the dungeon in Lord British's castle. You can then fly the balloon to Lock Lake. 2) Or else, you can sail a ship into the whirlpool, and you'll appear on the lake.

In Enchanter (Infocom), what do I do with the turtle?—JENNIFER SHULMAN, 12, Scarsdale, New York

You must VAXUM, NITFOL, and EXEX the turtle. Tell it to follow you and go to the Engine room. Then tell it to go Southeast and get the paper. Once it has done this, wave at it and get the scroll.



MUSIC PROGRAMS BY JOEY LATIMER

SCHOOL DAYS

Well, summer is over (sigh), and it's back-to-school time again. More of the ol' reading, writing, and 'rithmetic . . . and nowadays, ROM, RAM, and RUN as well. To help get you into the studying mood, this month's Microtones program is a traditional arrangement of the old favorite song, "School Days." Type it in and remember past school years and times gone by. Have fun!



APPLE II SERIES/SCHOOL DAYS

```
10 DIM V1%(96),V2%(96),V3%(96)
20 FOR I = 768 TO 850:READ A:POKE I,A:NEXT I
30 P = 1:FOR I = 1 TO 63
40 READ A,B
50 FOR J = 1 TO B:V1%(P) = A:P = P+1:NEXT J
60 NEXT I
70 FOR I = 1 TO 96:READ V2%(I):NEXT I
80 FOR I = 1 TO 96:READ V3%(I):NEXT I
90 HOME:VTAB 12:HTAB 14:PRINT "SCHOOL DAYS*"
100 FOR I = 1 TO 96
110 POKE 6,V1%(I):POKE 7,V2%(I):POKE 8,V3%(I):POKE 9,3
120 CALL 768:NEXT I:GOTO 100
999 REM -- MACHINE LANGUAGE FOR SOUND --
1000 DATA 160,2,162,0,185,6,0,240,1,232,136,16
1010 DATA 247,189,79,3,141,45,3,142,85,3,162,2
1020 DATA 181,6,208,5,172,85,3,208,3,32,44,3
1030 DATA 202,16,241,198,9,208,235,96,160,0,140,83
1040 DATA 3,160,255,140,84,3,168,240,3,141,48,192
1050 DATA 206,84,3,208,3,206,83,3,136,192,255,208
1060 DATA 243,172,83,3,208,232,96,6,18,9,6
1999 REM -- MUSIC DATA --
2000 DATA 37,3,45,3,57,3,76,3,57,2,61,1
2010 DATA 57,2,51,1,57,3,61,3,61,1,42,1
2020 DATA 68,1,61,1,42,1,68,1,61,2,61,1
2030 DATA 61,3,68,1,45,1,76,1,68,1,45,1
2040 DATA 76,1,68,2,68,1,68,3,76,1,57,1
2050 DATA 51,1,45,2,42,1,45,2,51,1,68,3
2060 DATA 76,1,61,1,57,1,51,2,45,1,51,2
```

```
2070 DATA 57,1,76,1,82,1,76,1,68,1,72,1
2080 DATA 68,1,61,2,57,1,37,2,45,1,61,2
2090 DATA 57,1,51,1,45,1,68,1,51,1,45,1
2100 DATA 76,1,57,3,0,3
3000 DATA 0,37,37,0,37,37
3010 DATA 0,37,37,0,37,37,0,37,37,0,33,33
3020 DATA 0,33,33,0,37,37,0,37,37,0,37,37
3030 DATA 0,37,37,37,40,42,0,37,37,0,37,37
3040 DATA 0,37,37,37,40,42,0,37,37,0,33,33
3050 DATA 0,33,33,0,33,33,0,37,37,0,37,37
3060 DATA 0,37,37,0,37,37,0,33,33,0,28,28
3070 DATA 0,37,37,0,57,57,0,33,33,0,37,37
3080 DATA 0,37,37,37,40,42
4000 DATA 57,45,45,76,45,45
4010 DATA 57,45,45,76,45,45,57,45,45,68,40,40
4020 DATA 103,42,42,76,42,42,76,42,42,68,42,42
4030 DATA 64,42,42,61,68,76,57,45,45,76,45,45
4040 DATA 57,45,45,76,68,61,57,45,45,68,61,54
4050 DATA 51,40,40,68,40,40,76,42,42,76,68,61
4060 DATA 57,45,45,76,45,45,88,42,42,82,40,40
4070 DATA 76,45,45,68,33,33,103,40,40,76,42,42
4080 DATA 118,45,45,76,68,61
```



IBM PCjr & COMPATIBLES/SCHOOL DAYS

This program has been tested and found to work on the following computers and hardware configurations, using the BASICS shown: IBM PCjr w/TV (or monitor w/speaker) and Cartridge BASIC J1.00. Tandy 1000 w/TV (or monitor w/speaker) and GW-BASIC 2.02 version 01.01.00.

```
10 DIM A$(7),B$(7),C$(7)
20 SOUND ON:BEEP OFF
30 FOR I=1 TO 7:READ A$(I):NEXT I
40 FOR I=1 TO 7:READ B$(I):NEXT I
50 FOR I=1 TO 7:READ C$(I):NEXT I
60 KEY OFF:CLS:LOCATE 12,14:PRINT "SCHOOL DAYS*"
70 FOR I=1 TO 7:PLAY A$(I),B$(I),C$(I):NEXT I:GOTO 70
1000 DATA T100G.E.C.<G.
1010 DATA >C<B8>CD8C.<B.
1020 DATA L8B>F<AB>F<AL4BB8B.
1030 DATA L8A>E<GA>E<GL4AA8A.
1040 DATA L8G>CDE4FE4D<A4.
1050 DATA GB>CD4ED4C<GF#GAG#AB4>C
1060 DATA G4E<B4>CDE<A>DE<G>L4C.P4.
2000 DATA V8T10002L8P8GGP8GGP8GGP8GG
2010 DATA P8GGP8AAP8AAP8GG
2020 DATA P8GGP8GGP8GGGF#F
2030 DATA P8GGP8GGP8GGGF#F
2040 DATA P8GGP8AAP8AAP8AA
2050 DATA P8GGP8GGP8GGP8GGP8AAP8>CC<
2060 DATA P8GGP8CCP8AAP8GGP8GGGF#F
3000 DATA V8T10002L8CEE<G>EECEE<G>EE
3010 DATA CEE<A>F#F#<D>FF<G>FF
3020 DATA <G>FF<A>FF<A#>FF<BAG
3030 DATA >CEE<G>EECEE<GAB
3040 DATA >CEE<AB>C#DF#F#<A>F#F#
3050 DATA <G>FF<GAB>CEE<G>EE<F>FF<F#>F#F#
3060 DATA <G>EE<A>AA<D>F#F#<G>FF<C>EE<GAB
```



MACINTOSH W/MICROSOFT BASIC 2.0 OR 2.1/SCHOOL DAYS

```
DIM WAV$(256),V1%(63,2),V2%(96),V3%(96)
FOR I=-128 TO 127:WAV$(I+129)=I:NEXT I
WAVE 0,WAV$:WAVE 1,SIN:WAVE 2,SIN
```



```

FOR I=1 TO 63
  READ V1%(I,1),C:V1%(I,2)=C*12
NEXT I
FOR I=1 TO 96:READ V2%(I):NEXT I
FOR I=1 TO 96:READ V3%(I):NEXT I
WINDOW 1,,(0,38)-(530,338)
CLS:TEXTSIZE 24:TEXTFONT 0
LOCATE 4,11:PRINT "*SCHOOL DAYS*"
BEGIN:
P1=1:P2=1
MEASURE:
T1=0:SOUND WAIT
WHILE T1<18
  T1=T1+V1%(P1,2)
  SOUND V1%(P1,1),V1%(P1,2)-1,,0:SOUND 0,1,,0
  P1=P1+1
WEND
FOR I=1 TO 3
  SOUND V2%(P2),5,,1:SOUND 0,1,,1
  SOUND V3%(P2),5,,2:SOUND 0,1,,2
  P2=P2+1
NEXT I
SOUND RESUME
IF P1<64 THEN MEASURE ELSE BEGIN
REM -- VOICE 1 --
DATA 784,1.5,659,1.5,523,1.5,392,1.5,523,1.5,494,0.5
DATA 523,1.5,587,0.5,523,1.5,494,1.5,494,0.5,698,0.5
DATA 440,0.5,494,0.5,698,0.5,440,0.5,494,1.5,494,0.5
DATA 494,1.5,440,0.5,659,0.5,392,0.5,440,0.5,659,0.5
DATA 392,0.5,440,1.5,440,0.5,440,1.5,392,0.5,523,0.5
DATA 587,0.5,659,1.5,698,0.5,659,1.5,587,0.5,440,1.5
DATA 392,0.5,494,0.5,523,0.5,587,1.5,659,0.5,587,1
DATA 523,0.5,392,0.5,370,0.5,392,0.5,440,0.5,416,0.5
DATA 440,0.5,494,1.5,523,0.5,784,1.5,659,0.5,494,1
DATA 523,0.5,587,0.5,659,0.5,440,0.5,587,0.5,659,0.5
DATA 392,0.5,523,1.5,0,1.5
REM -- VOICE 2 --
DATA 0,784,784,0,784,784,0,784,784,0,784
DATA 784,0,784,784,0,880,880,0,880,880
DATA 0,784,784,0,784,784,0,784,784,0,784
DATA 784,784,740,698,0,784,784,0,784,784
DATA 0,784,784,784,740,698,0,784,784,0,880
DATA 880,0,880,880,0,880,880,0,784,784,0
DATA 784,784,0,784,784,0,784,784,0,880,880
DATA 0,1046,1046,0,784,784,0,523,523,0
DATA 880,880,0,784,784,0,784,784,784,740,698
REM -- VOICE 3 --
DATA 523,659,659,392,659,659,523,659,659
DATA 392,659,659,523,659,659,440,740,740
DATA 294,698,698,392,698,698,392,698,698
DATA 440,698,698,494,698,698,494,440,392
DATA 523,659,659,392,659,659,523,659,659
DATA 392,440,494,523,659,659,440,494,554
DATA 587,740,740,440,740,740,392,698,698
DATA 392,440,494,523,659,659,392,659,659
DATA 349,698,698,370,740,740,392,659,659
DATA 440,880,880,294,740,740,392,698,698
DATA 262,659,659,392,440,494

```



TANDY COLOR COMPUTER/SCHOOL DAYS

```

10 DIM V(62,2)
20 FOR I=1 TO 62:READ V(I,1),V(I,2):NEXT I
30 CLS:PRINT@234,"*SCHOOL DAYS*"
40 FOR I=1 TO 62
50 SOUND V(I,1),V(I,2)*5
60 NEXT I
70 FOR D=1 TO 200:NEXT D:GOTO 40
1000 DATA 204,1.5,193,1.5,176,1.5,147,1.5,176,1

```

```

1010 DATA 170,0.5,176,1.5,185,0.5,176,1.5,170,1.5
1020 DATA 170,0.5,197,0.5,158,0.5,170,0.5,197,0.5
1030 DATA 158,0.5,170,1.5,170,0.5,170,1.5,158,0.5
1040 DATA 193,0.5,146,0.5,158,0.5,193,0.5,146,0.5
1050 DATA 158,1.5,158,0.5,158,1.5,146,0.5,176,0.5
1060 DATA 185,0.5,193,1.5,197,0.5,185,0.5,185,0.5
1070 DATA 158,1.5,146,0.5,170,0.5,176,0.5,185,1
1080 DATA 193,0.5,185,1.5,176,0.5,146,0.5,140,0.5
1090 DATA 146,0.5,158,0.5,151,0.5,158,0.5,170,1
1100 DATA 176,0.5,204,1.5,193,0.5,176,1.5,176,0.5
1110 DATA 185,0.5,193,0.5,158,0.5,185,0.5,193,0.5
1120 DATA 146,0.5,176,1.5

```



TI-99/4A/SCHOOL DAYS

```

10 CALL CLEAR
20 PRINT TAB(10);"TUNING UP"
30 DIM V1(96),V2(96),V3(96)
40 C=1
50 FOR I=1 TO 63
60 READ A,B
70 FOR J=1 TO B
80 V1(C)=A
90 C=C+1
100 NEXT J
110 NEXT I
120 FOR I=1 TO 96
130 READ A
140 IF A<>0 THEN 160
150 A=32767
160 V2(I)=A
170 NEXT I
180 FOR I=1 TO 96
190 READ A
200 IF A<>0 THEN 220
210 A=32767
220 V3(I)=A
230 NEXT I
240 CALL CLEAR
250 PRINT TAB(8);"*SCHOOL DAYS*"
260 FOR I=1 TO 96
270 CALL SOUND(250,V1(I),0,V2(I),8,V3(I),8)
280 NEXT I
290 GOTO 260
1000 DATA 784,3,659,3,523,3,392,3,523,2,494,1,523,2
1010 DATA 587,1,523,3,494,3,494,1,698,1,440,1,494,1
1020 DATA 698,1,440,1,494,2,494,1,494,3,440,1,659,1
1030 DATA 392,1,440,1,659,1,392,1,440,2,440,1,440,3
1040 DATA 392,1,523,1,587,1,659,2,698,1,659,2,587,1
1050 DATA 440,3,392,1,494,1,523,1,587,2,659,1,587,2
1060 DATA 523,1,392,1,370,1,392,1,440,1,416,1,440,1
1070 DATA 494,2,523,1,784,2,659,1,494,2,523,1,587,1
1080 DATA 659,1,449,1,587,1,659,1,392,1,523,3,32767,3
2000 DATA 0,784,784,0,784,784,0,784,784,0,784,784,0
2010 DATA 784,784,0,880,880,0,880,880,0,784,784,0,784
2020 DATA 784,0,784,784,0,784,784,784,740,698,0,784
2030 DATA 784,0,784,784,0,784,784,784,740,698,0,784
2040 DATA 784,0,880,880,0,880,880,0,880,880,0,784,784
2050 DATA 0,784,784,0,784,784,0,784,784,0,880,880,0
2060 DATA 1046,1046,0,784,784,0,523,523,0,880,880,0
2070 DATA 784,784,0,784,784,784,740,698
3000 DATA 523,659,659,392,659,659,523,659,659,392,659
3010 DATA 659,523,659,659,440,740,740,294,698,698,392
3020 DATA 698,698,392,698,698,440,698,698,466,698,698
3030 DATA 494,440,392,523,659,659,392,659,659,523,659
3040 DATA 659,392,440,494,523,659,659,440,494,554,587
3050 DATA 740,740,440,740,740,392,698,698,392,440,494
3060 DATA 523,659,659,392,659,659,349,698,698,370,740
3070 DATA 740,392,659,659,440,880,880,294,740,740,392
3080 DATA 698,698,262,659,659,392,440,494

```


COMPUCOPIA

SHORT PROGRAMS BY JOHN JAIN SCHIGG

MARQUEE

This short program displays any message you enter in big letters that scroll across your computer's screen, from right to left. It incorporates a machine-language subroutine (the DATA statements) to do the scrolling and large-scale printing. Take care to type this program in correctly, and SAVE a copy of the program on disk or cassette before typing RUN.

ATARI 400/800, 600/800XL, & 130XE/ MARQUEE

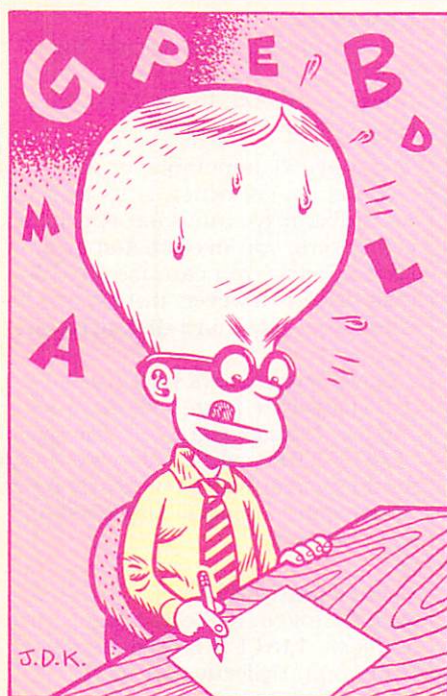
```
10 DIM MS(255)
20 FOR I=1536 TO 1686:READ A:POKE I,A:NEXT I
30 PRINT CHR$(125);
40 PRINT "WHAT IS YOUR MESSAGE";
50 INPUT MS:MS(LEN(MS)+1)=" ":PRINT CHR$(125)
60 FOR I=1 TO LEN(MS)
70 A=USR(1536,ASC(MS(I,I)))
80 FOR D=1 TO 100:NEXT D:NEXT I:GOTO 60
1000 DATA 24,165,88,105,128,133,203,165,89,105,2,133
1010 DATA 204,104,104,104,72,41,128,141,151,6,73,128
1020 DATA 141,152,6,104,41,127,201,96,176,12,201,32
1030 DATA 144,5,56,233,32,16,3,24,105,64,24,160
1040 DATA 0,140,110,6,160,3,10,46,110,6,136,208
1050 DATA 249,141,109,6,24,173,110,6,109,244,2,141
1060 DATA 110,6,162,7,169,7,141,154,6,169,0,141
```

```
1070 DATA 153,6,172,154,6,177,203,238,154,6,172,153
1080 DATA 6,145,203,200,140,153,6,192,40,208,235,136
1090 DATA 189,120,225,141,155,6,110,155,6,144,5,173
1100 DATA 152,6,176,3,173,151,6,145,203,136,192,31
1110 DATA 208,236,56,165,203,233,40,133,203,165,204
1120 DATA 233,0,133,204,202,16,182,96
```

COMMODORE 64 & 128 (C 64 MODE)/ MARQUEE

```
10 FOR I=49152 TO 49294:READ A:POKE I,A:NEXT I
20 PRINT CHR$(147);
30 INPUT "WHAT IS YOUR MESSAGE";MS
40 MS=MS+" ":PRINT CHR$(147);
50 FOR I=1 TO LEN(MS)
60 SYS 49152,ASC(MID$(MS,I,1))
70 FOR D=1 TO 100:NEXT D:NEXT I:GOTO 50
1000 DATA 169,128,133,251,169,6,133,252,169,0,141,95
1010 DATA 192,32,253,174,32,158,173,32,247,183,165,20
1020 DATA 160,3,10,46,95,192,136,208,249,141,94,192
1030 DATA 24,169,216,109,95,192,141,95,192,162,7,169
1040 DATA 7,141,144,192,169,0,141,143,192,172,144,192
1050 DATA 177,251,238,144,192,172,143,192,145,251,200
1060 DATA 140,143,192,192,40,208,235,136,169,254,45,14
1070 DATA 220,141,14,220,169,251,37,1,133,1,189,8
1080 DATA 218,141,145,192,169,4,5,1,133,1,169,1
1090 DATA 13,14,220,141,14,220,169,64,110,145,192,106
1100 DATA 145,251,136,192,31,208,243,56,165,251,233,40
1110 DATA 133,251,165,252,233,0,133,252,202,16,161,96
```

SHOP TALK CONTEST



When the SPECIAL KS start talking about computers, they sometimes fall into the "shop talk" trap. You know, words like POKE, RAM, and motherboard start pouring out of their mouths. That's OK around the office, but it drives their parents and

non-computing friends crazy!! Here's a word puzzle made just for the SPECIAL KS and other K-POWER kids. The idea was conceived by **Julie Mongado**, Birmingham, Alabama, one of the winners of a Contest Idea Contest we held months ago. There are lots of computer words hidden in this puzzle. Find 'em all, and send the

entry form back to K-POWER, 730 Broadway, New York, NY 10003. We'll put all of the perfect scores (we're expecting lots of them!) into the SPECIAL-K hat, and pull out three winners. They'll receive \$15 apiece. Good luck! (Also, check out Word Search in *The Programmer* this month.)

D	M	I	E	B	I	T	X	M	O	U	S	E	M
O	O	D	N	U	S	R	E	S	T	A	R	T	I
S	D	I	D	A	T	A	B	R	A	M	T	B	C
X	E	S	U	Z	Y	X	W	V	U	I	A	I	R
P	M	K	M	E	G	A	B	Y	T	E	S	N	O
A	A	S	P	B	B	C	A	G	A	E	F	A	C
P	B	S	A	V	E	D	S	F	I	L	E	R	P
P	R	O	G	R	A	M	I	C	H	I	P	Y	U
L	I	S	T	O	Z	Y	C	A	T	A	L	O	G
E	C	R	T	M	B	K	P	O	W	E	R	F	C

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 Birthdate _____ Sex _____
 Computer(s) I own _____

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NEW HARDWARE

COMPUTERS



A*Star PC/AT

MANUFACTURER: Wells American
ADDRESS: 3243 Sunset Boulevard,
West Columbia, SC 29169;
(803) 796-7800.
PRICE: \$1,495

The clones keep coming! First, it was the IBM PC compatibles; now it's the IBM PC AT compatibles.

The standard A*Star system comes with 512K RAM, a 1.2 megabyte disk drive, and a built-in clock/calendar. The system is fully compatible with the IBM PC AT, according to the company, which backs this claim with a 31-day, money-back guarantee.

Compared to a standard PC compatible, an AT compatible is faster, can store more on each disk, and its memory can be more easily expanded.

Wells American sells a 20-megabyte hard disk for \$449 and a 12-inch monochrome monitor for \$139. The built-in 220-watt power supply is ample for running a hard-disk drive. However, parallel and serial ports are not included, nor is a monitor adapter or a graphics card.

MONITORS



Taxan 132

MANUFACTURER: Taxan Corporation.
ADDRESS: P.O. Box 8698, City of Industry, CA 91748; (818) 810-1291
PRICE: \$250

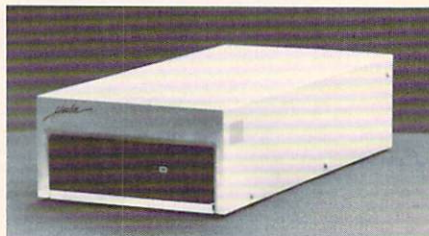
Many AT&T PC 6300 computer owners buy the system with a color mon-

itor because its color display is extremely sharp. However, some may want a monochrome monitor for word processing, and Taxan has an alternative.

Taxan's amber monochrome monitor is fully compatible with all AT&T plugs and circuit boards and is currently the only amber monitor available. Many users prefer amber over green-screen monitors, though there's no scientific evidence that they are any easier on the eyes.

The Taxan 132 supports a very high resolution (1,000 x 400), and will display color software in eight shades of gray.

MISCELLANEOUS



HabaDisk

MANUFACTURER: Haba/Arrays, Inc.
ADDRESS: 6711 Valjean Ave., Van Nuys, CA 91406; (818) 994-1899
PRICE: \$699

The Atari ST is notable for many reasons, one of which is its built-in hard-disk drive interface. (On most computers, you need to add an interface before you can use a hard-disk drive.) However, until recently, there's been no hard-disk drive to connect!

Now, Haba/Arrays has introduced a 10-megabyte hard-disk drive for the ST. It plugs right into the back of the ST (the cable is provided), and stores the equivalent of nearly 5,000 double-spaced pages. HabaDisk is self-powered.

Smart Cable 817

MANUFACTURER: IQ Technologies, Inc.
ADDRESS: 11811 N.E. First Street, Suite 308, Bellevue, WA 98005;
(206) 451-0232
PRICE: \$50

Do you have more than one computer, but only one printer? Do you have one computer, but several peripheral devices vying for the use of your RS-232C serial port? Do you have a serial card that needs to be specially "configured" every time you

switch devices? Any one of these situations cries out for the Smart Cable 817, the "intelligent" connection between computers and peripherals.

Smart Cable 817 looks at the RS-232 signals from the computer and the peripheral, and uses its own logic circuitry to make the right connection. All you do is plug in the cable and set two switches. The computer can be any make or model as long as it has a standard RS-232 port. The peripheral can be any RS-232 device, such as a printer, music generator, voice digitizer, modem, plotter, bar code reader, or electronic typewriter.

Sega Master System

MANUFACTURER: Sega of America, Inc.
ADDRESS: 2149 Paragon Drive, San Jose, CA 95131; (408) 435-0201
PRICE: \$150

Is your computer being monopolized by resident game players? Is your financial and home-business tool spending too much time conquering far-off lands and not enough time conquering close-to-home budget problems? If so—and if you're not yet ready to invest in a second computer—the Sega Master System may be able to quench your family's appetite for fast-action games.

Sega Enterprises, Ltd. of Tokyo has been in the coin-operated arcade and video game business since 1965 and has formed a United States subsidiary which will sell the Sega Master System, a hardware and software home-video game ensemble. For just \$150, the Master System includes its Power Base console, two Control Pads, and a Light Phaser for split-second target shooting. A combination cartridge of Hang On/Safari Hunt is packaged with each unit.

Twenty-five sports, target shooting, and action/adventure games are currently available for the Sega Master System. The software, which offers nice graphics, fast action, and music and sound effects, is available on both 256K Sega Cards (the size of credit cards) and 1048K Mega Cartridges. The games cost \$25 and \$30, respectively.

Also available with the Sega Master System are a Sports Pad controller, intended to increase players' dexterity and involvement in Sega's sports software, and a Graphic Board that lets users create on-screen designs. **FC**

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\$ 755 FX (add \$ 95 for assmld & tested)

a-286(AT) Starter-Kit Form: 640K RAM 6/8 mhz, 1-360K Drv
TTL Amber Mon., Mono-Graphics. Complete.

\$ 1330 (add \$ 95 for assmld & tested)

286-ATP or FX-ATP Trans-Portables - Kit Form: AT or FX compatible Portable - kit. 286 or FX M-board, Mono-Graphics, TTL Amber. Add to FX or a-286 prices above add \$ 200 for FX or 286 kit, add \$ 240 to assembled \$.

Warranty on ISHVAR's kits are for 9 months, assembled & test are for 12 months.

(Hard-Disk systems include 4+ mega-bytes of public-domain software)

Citizen 120-D 120 cps	\$ 195	Citizen MSP-10 160 cps	\$ 295
20 Meg Hard-Disk w/ctrlr	\$ 405	30 Meg 1/2 hi w/ctrlr	\$ 505
1200 Baud internal modem	\$ 138	Call for complete list of items carried.	

ISHVAR Technology 1-209-561-3139

43571 Sierra Drv. Hwy, Three Rivers, Ca. 93271

TERMS Call for current terms. Prices are subject to change. 30 day money-back guarantee available. IBM, XT, AT are trade marks of IBM Corp.

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DATE _____
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LAB DATA 1) 055 2) 222 3) 4) 5) code numbers
1) FBS = 125
2) SMAC-NORMAL corresponding
3) statements
4)
5)

DIAGNOSIS 1) 004 2) 3) 4) 5)
1) DIABETES-INSULIN DEPENDENT-GOOD CONTROL
2)
3)
4)
5)

TREATMENT 1) 111 2) 133 3) 234 4) 5) 6)
1) CONTINUE MEDICATIONS
2) RETURN IN 2 WEEKS
3) REPEAT FBS IN 2 WEEKS
4)
5)
6)

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SOFTWARE GUIDE

Welcome to FAMILY COMPUTING's Software Guide, the most comprehensive listing available of two dozen of the newest, most noteworthy, and/or best programs on the market. Our reviewers include families from all over the country who have judged the software according to the following criteria: long-term benefits and applications, adaptability, and advantages of using a computer for a given task. Programs have been evaluated and rated for their performance in each of the categories listed below. More detailed reviews follow the chart. Unless otherwise noted, all programs are in disk format, and minimum memory requirements are 48K for Apple II series, 48K for Atari, 128K for IBM PC/PCjr or compatibles, and 128K for Macintosh. "Atari" alone denotes the 800/XL/XE series. "C 64/128" means the software will run on both a C 64 and a C 128 computer in C-64 mode; "C 128" alone

means the software will run only on that machine.

Here's a rundown of the rating categories and what they mean: **O** = Overall performance, given the limitations and capacities of the particular computer for which the software is intended. **D** = Documentation, or the instructions and literature that accompany a program. **EH** = Error-handling, the software's capacity to accommodate errors made by the user—an especially important consideration with software for younger users. **PS** = Play system (in the games reviews), the quality of the game design and the game's playability. **GQ** = Graphics quality, also evaluated in light of each particular brand's graphics capabilities. **EU** = Ease of use after the initial learning period, which varies from computer to computer. **V** = Value for money, or how the software measures up to its price.

HOME BUSINESS & PRODUCTIVITY

Title Publisher Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings					
				O	D	EH	GQ	EU	V
ANALYZE! Micro-Systems Software 4301-18 Oak Circle Boca Raton, FL 33431 (305) 391-5033 (800) 327-8724 \$100 ©1985, 1986	You can't judge a program just by its documentation; in this case the manual's poor, but the spreadsheet's fine. While <i>Analyze</i> doesn't come with predefined formulas on disk, editing is easy. Can be useful in a short time. —REIFSNYDER	Amiga.	30-day warranty. User makes backup.	★ ★ ★	★ ★ ★	★ ★ ★	N/A ★ ★	E ★ ★	★ ★ ★
GRAPHICS EXPANDER, VOL. 1 Springboard Software, Inc. 7808 Creekridge Circle Minneapolis, MN 55435 (612) 944-3912 \$40 ©1985, 1986	Gives you over 300 new pictures for <i>The Print Shop</i> , as well as icon-driven drawing tools to create new graphics or alter existing ones. It's similar to <i>The Print Shop Companion</i> , but not quite as good. —FRANK	Reviewed on 64K Apple. Also for IBM PC/PCjr.* KoalaPad, mouse optional.	60-day warranty. \$5 thereafter. \$12 for backup. 30-day money-back guarantee.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E ★ ★	★ ★ ★
HOMEBASE Computer Easy 414 E. Southern Tempe, AZ 85282 (602) 829-9614 \$20 ©1985	Just about the right amount of data-base power for many families. Has an appealing \$20 price tag, too. An on-disk tutorial introduces data bases and shows you how to set up a file. —ELTGROTH	C 64/128.	90-day warranty. \$5 thereafter. User makes backup.	★ ★ ★	★ ★ ★	★ ★ ★	N/A ★ ★	E ★ ★	★ ★ ★
PRIVATE FILES Sofistry, Inc. 5252 Thorn Tree Irvine, CA 92715 (714) 474-1466 \$149 ©1984, 1986	With step-by-step prompts and comprehensive menus, here's a data base that's not complex, yet still delivers plenty of power. As you become more savvy, a separate utility offers more control.† —RASKIN	192K IBM PC, or 256K IBM PCjr.*	Unlimited warranty. User makes backup.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	N/A ★ ★ ★	E ★ ★ ★	★ ★ ★ ★
WORD PERFECT JR. Satellite Software Int'l 288 W. Center St. Orem, UT 84057 (800) 321-5906 \$89 ©1985	A scaled-down version of its professional quality sibling, <i>Jr.</i> is a word processor for the whole family. Nice features include a 50,000-word spelling checker for a word, page, or document. —SUMMERS	IBM PC/PCjr.*	30-day warranty. \$15 thereafter. User makes backup.	★ ★ ★	★ ★ ★	★ ★ ★	N/A ★ ★	E ★ ★	★ ★ ★
WORD WRITER 128 Timeworks, Inc. 444 Lake Cook Road Deerfield, IL 60015 (312) 948-9200 \$70 ©1983, 1985	For your family or for a small business, <i>Word Writer</i> offers many of the benefits of full-featured word processors, plus some solid extras (such as pull-down menus). Includes calculator.† —BRADLEY	C 128. RGB or high-resolution monochrome monitor required for 80 columns.	90-day warranty. \$15 for backup.	★ ★ ★	★ ★ ★	★ ★ ★	N/A ★ ★	E ★ ★	★ ★ ★

RATINGS KEY O Overall performance; D Documentation; EH Error-handling; GQ Graphics quality; EU Ease of use; V Value for money; ★ Poor; ★★ Average; ★★★ Good; ★★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart.

*Titles listed for the IBM PC/PCjr will also run on many IBM PC compatibles; owing to the proliferation of compatibles, check with the publisher of the program or your dealer for compatibility.

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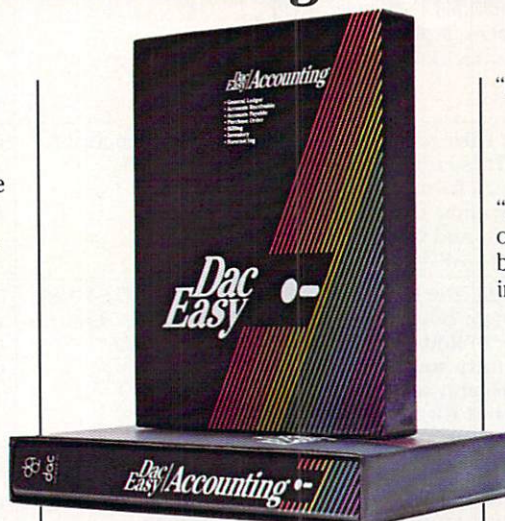
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EDUCATION/FUN LEARNING

Title Publisher Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings					
				O	D	EH	GQ	EU	V
THE ADVENTURES OF SARAH AND HER FRIENDS & THE ADVENTURES OF KRISTEN AND HER FAMILY Rhiannon Software 3717 Titan Drive Richmond, VA 23225 (804) 320-7584 \$25 each ©1985	Two simple activity programs for ages 4-6. In <i>Sarah</i> , kids decide the correct sequence of events. For example, which comes first: the cocoon, the caterpillar, or the butterfly? In <i>Kristen</i> , the adventure includes choosing family members, a place to live, and what chores to do. —ELTGROTH	Apple. Color monitor recommended.	30-day warranty. \$8 thereafter	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A ★ ★	★ ★ ★
FISH SCALES DLM One DLM Park Allen, TX 75002 (214) 248-6300 \$30 ©1985	Who needs a ruler more than a fisherman? This entertaining program uses a fishing motif to teach children how to measure height, length, and distance. Six games for ages 4-8.† —ELTGROTH	Apple. Color monitor recommended.	6-month warranty. \$15 thereafter, or for backup.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E ★ ★	★ ★ ★
JUNGLE BOOK READING Fisher-Price, a division of Spinnaker Software One Kendall Square Cambridge, MA 02238 (617) 494-1200 \$25 (C 64); \$40 (Apple) ©1985	You are Mowgli, the hero of Kipling's <i>Jungle Books</i> , and you won't be able to find Bagheera the panther until you read selected fables and answer questions about them. Clever animation, speech synthesis, and real learning make this a winner for ages 7-12.† —SUMMERS	Reviewed on C 64/128. Also for Apple. Joystick recommended.	30-day warranty. \$5 thereafter. \$12 for backup.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E ★ ★	★ ★ ★
KIDTALK First Byte, Inc. 2845 Temple Ave. Long Beach, CA 90806 (213) 595-7006 \$60-\$80 ©1985	Imagine writing stories that talk as you type—speaking letters, words, or sentences as you complete them. Then add some kid-easy features like picture menus. All words aren't pronounced perfectly. —AKER	Reviewed on Macintosh. Also for Amiga. Planned for 128K Apple IIe/IIc, Atari 520ST.	90-day warranty. \$15 thereafter, or for backup.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E ★ ★	★ ★ ★
MAPS U.S.A. Radarsoft, distributed by ACK, Inc. 655 John Muir Drive, E411 San Francisco, CA 94132 (415) 239-5357 \$40 ©1985	Learn geography as you push a helicopter joystick in a race around the United States, while you locate states, cities, mountains, and waterways. Five levels keep players challenged. Sure beats a textbook. For ages 9+. —SUMMERS	Reviewed on C 64/128. Also for 128K Apple IIe/IIc. Joystick. Color monitor recommended.	90-day warranty.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E ★ ★	★ ★ ★
MATH SHOP Scholastic Software 730 Broadway New York, NY 10003 (212) 505-3501 \$40 ©1986	An imaginative and challenging simulation that takes you to a shopping mall to practice several advanced math skills by becoming a worker in a variety of shops. For ages 12-14.† —FRANK	64K Apple.	60-day warranty. \$10 for 10 months thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E ★ ★	★ ★ ★
MYSTERY! Woodbury Software 127 White Oak Lane Old Bridge, NJ 08857 (201) 679-0200 \$40 ©1986	Are you searching for something that will encourage your children to write? <i>Mystery!</i> leads young writers through six chapters of a mystery with prompts for creating characters and plots. Includes special paper for printing out your "book." For ages 9+. —ELTGROTH	Reviewed on C64/128. Also for Apple, IBM PC/PCjr.* Printer.	1-year warranty. \$10 for backup.	★ ★ ★	★ ★ ★	★ ★ ★	N/A ★ ★	A ★ ★	★ ★ ★
WRITING, VOLUMES 1-5 EduWare 185 Berry St. San Francisco, CA 94107 (415) 546-1937 \$40 each ©1984, 1985	Here's a set of five disks, each focusing on a different writing problem, like using contractions correctly, writing complete sentences, or making subject and verb agree. Succeeds admirably. For ages 12+.† —MORRIS	Reviewed on 64K Apple. Also for IBM PC/PCjr.* with color graphics card.	90-day warranty. \$12 thereafter, or for backup (each disk).	★ ★ ★	★ ★ ★	★ ★ ★	N/A ★ ★	E ★ ★	★ ★ ★

RATINGS KEY O Overall performance; D Documentation; EH Error-handling; GQ Graphics quality; EU Ease of use; V Value for money; ★ Poor; ★★ Average; ★★★ Good; ★★★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart.

*Titles listed for the IBM PC/PCjr will also run on many IBM PC compatibles; owing to the proliferation of compatibles, check with the publisher of the program or your dealer for compatibility.

ENTERTAINMENT REVIEWS BY JAMES DELSON

Title Publisher Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings					
				O	D	PS	GQ	EU	V
ARCTICFOX Electronic Arts 1820 Gateway Drive San Mateo, CA 94404 (415) 571-7171 \$40 ©1986	You're in Antarctica in "the near future," and you control a high-performance, heavily-armored tank. Your mission? Seek and destroy alien installations. Phenomenal! For ages 8+.†	Amiga. Joystick or mouse recommended.	90-day warranty. \$7.50 thereafter or for backup.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★ ★ ★
CONFLICT IN VIETNAM MicroProse Software 120 Lakefront Drive Hunt Valley, MD 21030 (301) 667-1151 \$40 ©1986	You'll fight each battle in real time in this compelling, frustratingly realistic game. Includes five Vietnam War scenarios for 1-2 players. Also offers fantasy and what-if variants on history.	Reviewed on C 64/128. Also for Atari. Planned for IBM PC/PCjr. Joystick optional.	90-day warranty. \$10 thereafter or for backup.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★ ★ ★
THE CRIMSON CROWN Polarware Software 2600 Keslinger Road Geneva, IL 60134 (312) 232-1984 \$18-\$30 ©1985	Lead a party of characters on a quest through the treacherous land of the Vampire, in order to put the rightful heir on the throne. I wish this text/graphic adventure had animation and arcade sequences.	Reviewed on Apple IIe/IIc. Also for Amiga, Atari 520ST, C 64/128, IBM PC/PCjr,* Macintosh.	60-day warranty. \$5 thereafter.	★ ★	★ ★	★ ★	★ ★	A	★ ★
HIPPO BACKGAMMON Hippopotamus Software, Inc. 985 University Ave. Los Gatos, CA 95030 (408) 395-3190 \$40 ©1985	A backgammon game that's also a construction set of sorts: you can modify the strategic and tactical abilities of the computer players (called "robots"). A programming error makes an illegal move possible.	Atari 520ST.	90-day warranty. \$10 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
MAC GOLF Practical Computer Applications, Inc. 1305 Jefferson Highway Champlin, MN 55316 (612) 427-4789 \$60 ©1985, 1986	Choose from two 18-hole courses, three levels, 14 clubs, and many options on each shot, such as stance, stroke power, and angle of the shot. Superb graphics and sound effects also help make this game great.†	512K Macintosh.	Unlimited warranty (includes user-damaged).	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★ ★ ★
RENDEZVOUS WITH RAMA Telarium Software, a division of Spinnaker One Kendall Square Cambridge, MA 01239 (617) 494-1200 \$15 ©1984	An imaginative text/graphic adventure that places you in deep space, exploring an alien spacecraft. Discover the self-contained world of Rama, based on the novel by Arthur C. Clarke. With a robot sidekick.	Reviewed on C 64/128. Also for 64K Apple, IBM PC/PCjr.* Joystick.	30-day warranty. \$5 thereafter. \$12 for backup.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	D	★ ★ ★
THE SLUGGER Mastertronic International 7311B Grove Road Frederick, MD 21701 (301) 695-8877 \$10 ©1984	You'll find many hours of fun with this fine little baseball game. Includes eight different pitches and three batting options. You also field balls and steal bases. Nothing earth-shaking but the price.	C 64/128. Joystick(s).	30-day warranty.	★ ★	★ ★	★ ★	★ ★	E	★ ★ ★
SPELL OF DESTRUCTION Mindscape, Inc. 3444 Dundee Road Northbrook, IL 60062 (312) 480-7667 \$30 ©1985	Guide your apprentice sorcerer through over 70 beautifully detailed rooms in a castle, while you gather items, fight monsters, and learn spells. Fast-paced strategy/arcade fun for ages 12+.	C 64/128. Joystick.	90-day warranty. \$12.50 thereafter or for backup.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
STELLAR CONFLICT Handic Software, Inc. 400 Paterson Plank Road Carlstadt, NJ 07072 (201) 933-1455 \$20 ©1985	Design and build your own simple shoot-em-up arcade games with this construction set that's good for novice gamers or kids, ages 6+. Dated graphics and play system are drawbacks.	C 64/128. Joystick.	60-day warranty.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
STUNT FLYER Sierra On-Line, Inc. Sierra On-Line Building Coarsegold, CA 93614 (209) 683-6858 \$25 ©1984	Learn the basics of small-plane aerobatics, and then advance to difficult maneuvers and enter competitions. Takes a while to master, but there's fun for all levels. Includes instant replays.†	C 64/128. Joystick optional.	90-day warranty. \$5 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★

RATINGS KEY O Overall performance; D Documentation; PS Play system; GQ Graphics quality; EU Ease of use; V Value for money; ★ Poor; ★★ Average; ★★★ Good; ★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart.

*Titles listed for the IBM PC/PCjr will also run on many IBM PC compatibles; owing to the proliferation of compatibles, check with the publisher of the program or your dealer for compatibility.

SOFTWARE REVIEWS

On the following pages, you'll find in-depth reviews of some of the programs listed in the Software Guide. Refer back to the Guide on page 86 for information such as backup policies and addresses of software publishers.

HOME BUSINESS & PRODUCTIVITY

Private Files

HARDWARE REQUIREMENTS: 192K IBM PC or 256K IBM PCjr.
PUBLISHER: Sofistry, Inc.
PRICE: \$149

Data bases have a nasty reputation for being difficult, but *Private Files* could change all that—it's complete without being unnecessarily complex.

Private Files makes it easy to design your own data base of records. First, you specify the particulars of each field (or category) of information, such as its length, whether it contains words or numbers, and if it's a key field (key fields are specially marked categories that can be used later when you want to sort and search through your data).

The program's flexibility lets you move the fields around the screen until you are pleased with how your entry form looks. Get artistic as you draw boxes and lines to give your form definition and make it easier to read. Then, enter your information.

Traditionally, a data base becomes tough when you try to create a printed report based on specific criteria contained in your files. But *Private Files*' report generation capabilities are both exceptionally easy and powerful. You are prompted step-by-step through the creation of a report in one of three formats: columns of data, lists of data, or mailing labels. Reporting features include such selection modes as greater than, less than, and not equal to. You can specify "and/or" criteria, too; so, for instance, you could pull out of your data base the records of all employees who made the sales quota and who have been with the company for more than two years.

Once you get savvy with data bases, however, you'll start wishing for more capabilities. That's where *Private Files Plus*, a separately purchased utility program (\$40), comes in. It offers such power-user features as the ability to merge two files to create a third and the ability to take data from or send data to different

programs, including spreadsheets, word processors, and other data bases. If, for example, you want to take figures from *Private Files* and place them in Lotus' 1-2-3 for further calculations, no problem.

Private Files does have limitations. Records are limited in length, so it is not especially good for long streams of text-intensive data such as recipes or bibliographic notes for a thesis. And its math and statistical capabilities are minimal. But, in general, *Private Files*' comprehensive menus, detailed manual, and powerful utilities ensure that you'll not only have initial success with it, but you'll have long-term use as well.

—ROBIN RASKIN

Word Writer 128

HARDWARE REQUIREMENTS: C 128.
PUBLISHER: Timeworks, Inc.
PRICE: \$70

My introduction to word processing involved several days of sweat to produce a simple letter. In contrast, *Word Writer 128* is so straightforward that I was able to produce a finished letter in minutes after only a glance at the manual.

Word Writer delivers many of the benefits of full-featured word processors (such as horizontal scrolling and form letters), plus some good extras. For example, Macintosh-like pull-down menus offer enough on-screen help that, once the menu mode was explained, two of my children were able to produce their own letters without any further assistance. A built-in calculator pops up to help with knotty math problems, and the result can be inserted directly into your text with one keystroke. David, age 11, found the 85,000-word spelling checker a boon, but 19-year-old Chris was frustrated by its slowness.

The manual is well-written and attractively laid out. It will guide even a novice through the more subtle mysteries of word processing in a surprisingly short time. One fun option lets you switch both background and character colors. Imagine red for angry letters, or green for an article on the wonders of nature.

Word Writer is fun to use, and it is excellent for occasional users who forget complicated command sequences between sessions. It will also accept information from Timeworks' *Data Manager 128* and *SwiftCalc 128*. All in all, a good program for the money. —SUNOW BRADLEY

EDUCATION/ FUN LEARNING

Fish Scales

HARDWARE REQUIREMENTS: Apple.
PUBLISHER: DLM
PRICE: \$30
PUBLISHER'S SUGGESTED AGES: 4-8

A fishing motif—used to show children how to measure height, length, and distance—contributes to *Fish Scales*, a math program that both entertains and teaches. The six games that comprise the package make excellent use of graphics, sound, and music to motivate young players and to reinforce their correct answers.

In the Fish Jump game, for example, the child presses any number key and watches a fish jump over the correct number on a vertical scale. In the next three games, players use on-screen rulers to measure the length of a fish or the depth of a line. Two distances are compared in Fishing Dock, the fifth game. In the sixth section, Fishing Derby, two players compete in a number-guessing game with "smaller or larger" clues.



Kindergarten-age children loved *Fish Scales*; they played quite independently after a brief introduction. Younger children enjoyed having mom or dad sitting close by, coaching and exclaiming at all the sizes and shapes of fish. We noticed that 8-year-olds zeroed in on the competitive game, but they found most of the measuring tasks too easy.

Among the strong points here are the teaching suggestions for parents that accompany the instructions. Young children almost always learn better if there is a personal involvement in their learning activities, so DLM's suggestions are valuable and worth following. To help children with what otherwise might be a dry subject, *Fish Scales* rates four stars all the way.

—MARLENE ELTGROTH

Jungle Book Reading

HARDWARE REQUIREMENTS: Apple, C 64/128.

PUBLISHER: Fisher-Price/Spinnaker

PRICE: \$25-\$40

PUBLISHER'S SUGGESTED AGES: 7-12



You are Mowgli, the hero of Rudyard Kipling's classic *Jungle Book*. You must find Bagheera the panther, who is trapped in a cave somewhere in the jungle. Beautifully detailed graphics, clever animation, and sometimes even speech synthesis grace each screen as you guide Mowgli through treetops and caves in your search. Every time you enter a cave, a different animal blocks your path. In order to pass each animal, you must first learn the correct command from Baloo the bear. Only after you have read a new jungle fable and correctly answered six questions about it will Baloo tell you which animal will let you pass. Baloo stubbornly waits for you to get all of the answers right; he'll give you clues, but they'll cost you points. It's best to re-read.

Our children were delighted with *Jungle Book Reading* from the moment they saw it; they were eager to breeze past the lessons and get on with the game. They especially liked the computerized speech as Baloo speaks to the animals: "Hail, Lord Tiger!" (Note that because of hardware limitations, the speech synthesis is more accurate on the C 64 than the Apple.) However, the children soon discovered that while a quick read gave them the main idea, they had to interpret and infer rather than merely parrot phrases. The game isn't as easy as it looks, either. Mowgli's world is complex, with a ruined temple, trees, and underbrush to explore. It took us a while with the joystick to learn to manipulate Mowgli, who must climb vines and leap over chasms.

Jungle Book Reading did a great job of maintaining our children's interest. Baloo never seems to run out

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SOFTWARE REVIEWS

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—TAN A. SUMMERS

Math Shop

HARDWARE REQUIREMENTS: 64K Apple.
PUBLISHER: Scholastic Software
PRICE: \$40
PUBLISHER'S SUGGESTED AGES: 12-14

Welcome to the *Math Shop* shopping mall! In this imaginative and challenging program, you'll need to get a job as a clerk in one of the ten different shops in the mall. Each job demands that you perform some type of calculation in order to wait on customers.

For example, in the Boutique you must calculate the amount of change a customer should receive and then give it to her using the fewest coins possible. As you progress to the shops on the mall's top floors, the tasks grow more difficult. In the Donut Shop, the machine that bakes, glazes, and fills donuts must be set to produce each order properly. If a customer wants 12

plain and six glazed donuts, for instance, you must tell the machine how many donuts to make and what proportions should be glazed (one-third, in this case). As you successfully fill orders in each shop, the degree of difficulty increases. So as you progress in the Donut Shop, a third type of donut would be added to each order.



Math Shop becomes more of a game if you choose to work against the clock, or if you choose to work in all of the shops as customers come and go (should they have to wait in line too long, they'll leave and you'll lose points).

What a great improvement over the usual math drills and games

that are available. *Math Shop* covers a wide range of skills in an engaging way. Wrong answers are followed by specific and helpful comments until you produce the correct answer. However, I suspect that this program might not be played voluntarily by most kids at home without a little encouragement from their parents. *Math Shop* is definitely more challenging than an arcade game.

—CATHY FRANK

Writing, Volumes 1-5

HARDWARE REQUIREMENTS: 64K Apple, IBM PC/PCjr.
PUBLISHER: EduWare
PRICE: \$40 each
PUBLISHER'S SUGGESTED AGES: 12+

It has become commonplace to hear that Americans don't know how to write anymore. How many times have you seen a sign like "Tomato's For Sale"? Does it bother you when you do?

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verbs agree; selecting correct pronouns; and writing complete sentences. Each of the five programs works individually, or all five programs can be used together for a complete writing improvement course.

The format in each package is the same. In the pretest writing sample, you identify the areas in which you need further study. Then lessons illustrate common writing errors, present rules to help you avoid those errors, and provide practice in applying the rules. The software is easy to work with and the documentation is thorough.

I do wish, however, that there were some way to assess your strengths and weaknesses in different areas of writing before you purchase the software, but there's not. That means you must pay \$40 for each package before you know whether you need to improve those aspects of your writing. This is a very expensive form of trial-and-error!

The *Writing* series still succeeds admirably in making a complex and potentially boring topic both easy to understand and interesting. Even our kids (accustomed as they are to

looking at software) gave it a four-star rating. Our whole family discovered areas in which our writing could be made better, and we noticed significant improvement after a relatively short time. My daughter Anne suggested that the series would be excellent preparation for the Scholastic Aptitude Test (SAT). As a college professor, I agree; virtually all of my students would benefit immensely from *Writing*.

—TONY MORRIS

ENTERTAINMENT

Arcticfox

HARDWARE REQUIREMENTS: Amiga.

PUBLISHER: Electronic Arts

PRICE: \$40

CRITIC'S SUGGESTED AGES: 8+

Arcticfox, Electronic Arts' new program for the Amiga, is so hot it practically melts the South Polar ice cap, which is the setting of this strategy/arcade game. A state-of-the-art adaptation of the ever-popular coin-operated simulation, *Battleground*, *Arcticfox* places you in Antarctica in "the near future," where you control a high-performance, heavily armored tank. Your mission? To destroy evil aliens sent to (you



got it!) dominate Earth.

Your tank is armed with heavy cannon, guided missiles, and mines, and it's also capable of "digging in" to prevent being detected by alien vehicles. Employing advanced radar, it can spot distant targets, giving you the choice of evasive action or combat. The tank can even use those guided missiles as long-range "eyes" to help you seek out (or destroy) enemy installations. With super acceleration, you can gain speeds up to 100 mph in a few seconds. There are three play levels, superb sound effects, and phenomenal graphics—features that show off the Amiga at its best.

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SOFTWARE REVIEWS

the game can easily be played by two; judging by the reactions of the playtesters, this will prevent arguments over who can use the computer. *Arcticfox* creates high excitement with its in-cockpit feel of modern combat. It's a winner all the way.

MacGolf

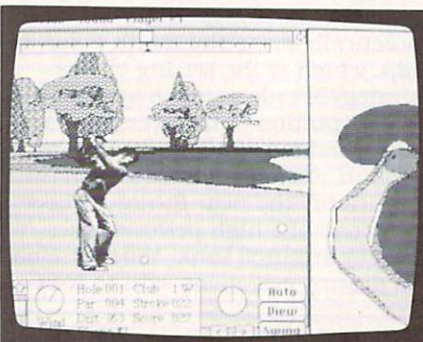
HARDWARE REQUIREMENTS: 512K Macintosh.

PUBLISHER: Practical Computer Applications, Inc.

PRICE: \$60

CRITIC'S SUGGESTED AGES: 8+

Attention Macintosh owners. Here's a superb golf game for one to four players that offers an accurate feel for the sport while providing two beautifully designed 18-hole courses. With all kinds of wonderful details,



this simulation lets you choose from three skill levels, 14 different golf clubs, and an infinite combination of options on each shot, such as choice of stance, stroke power, foot position, and angle and direction of your shot.

Both courses are par 72, and each is superbly drawn down to the last tree, displaying the Mac's graphics capabilities to the fullest. And the sound! Shots that accidentally land in a water hazard result in a "ker-plop!" The first putt on each hole to go in the cup gets applause from your imaginary audience, and near-misses draw an "awww" from the fans.

MacGolf delivers an excellent play system; each level requires better abilities in every aspect of the game. Thus a beginning player isn't faced with the stronger winds found in the higher levels; the intermediate player must judge putting distances more carefully than the novice, etc. To test the system, I played a round of golf using all three levels of play. I found the first two very enjoyable, but the advanced level was phenomenally difficult. My score after 18 holes: novice, 85; intermediate, 91; and advanced, 178!

Playtesters ranked *MacGolf* one of the year's best, placing it ahead of Gamestar's *Championship Golf* in playability and sound but behind in graphics (since *Championship* is in color).

Stunt Flyer

HARDWARE REQUIREMENTS: C 64/128.

PUBLISHER: Sierra On-Line

PRICE: \$25

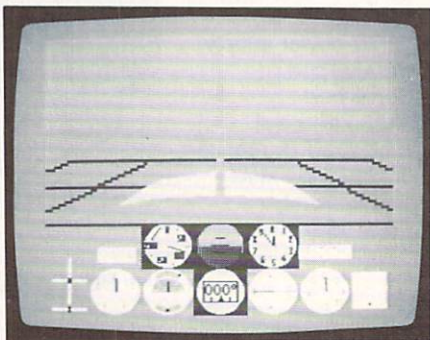
CRITIC'S SUGGESTED AGES: 8+

Want to try aerobatics in a small airplane? Then try *Stunt Flyer*, a difficult but rewarding simulator.

You start off by learning the basics of flying, using a joystick and keyboard (or the keyboard alone) to control the elevators, ailerons, rudder, and throttle. You master the complexities of the control panel displays, everything from the air-speed indicator and altimeter to the G meter and tachometer.

Then, you advance to learning aerobatics, the tricky maneuvers that are the heart of stunt flying. You're offered 14 basic stunts, from the easy "loop and roll" to the complex "inverted hammerhead." They all take hours of practice, but to help you, the program gives an instant replay option that lets you see what you just did from the control tower's point of view.

After you feel you know what you're doing, you can enter flying competitions—which is ideal gaming for the whole family, since every member of the tournament can design his or her own program of flying tricks to amuse the other participants.



Though the game's graphics are dated, *Stunt Flyer* is a highly enjoyable game and a great teaching tool as well. (See the *Entertainment* department in this issue for more on the educational uses of gaming software.) There's fun here for all levels of flight experience.

—REVIEWS BY JAMES DELSON

NEW

PRODUCTS

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have also been integrated into the package.

Says Kevin O'Leary, President of SoftKey "The release of KEYLIBRARIAN version 1.5 was delayed for one primary reason...to give us time to incorporate the specific enhancements requested by a team of pre-release users, that included doctors, lawyers, accountants, scientists and librarians. It was a classic case of the craftsmen designing their own tools."

KEYLIBRARIAN record capacity, has been expanded to 33,000 records. Full searching, ranging intelligence has been incorporated into KEYLIBRARIAN's logic, and an interactive help function has also been added that provides windows of information specific to the task at hand.

Added O'Leary "There is no question that there has been an opportunity loss for SoftKey, in terms of KEYLIBRARIAN sales, by delaying the new version's release. However, the beta test user's input allows us to offer a library reference manager that meets over 90% of the professional's requirements. Besides, the additional six months of beta testing has made KEYLIBRARIAN an extremely stable date abstracts and key search words that can be used to retrieve files at a later date.

The new release of KEYLIBRARIAN, includes the ability to sort any field and create Author and Co-Author dictionaries that can be cross referenced by title or subject. KEYLIBRARIAN's report generator will automatically create hard copy reports and bibliographies, or, the same output can also be directed to data files.

Gem Island Software The Recipe Manager

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files may be merged directly into word processing programs. reason...to give us time to incorporate the specific enhancements requested by a team of pre-release users, that included doctors, lawyers, accountants, scientists and librarians. It was a classic case of the craftsmen designing their own tools."

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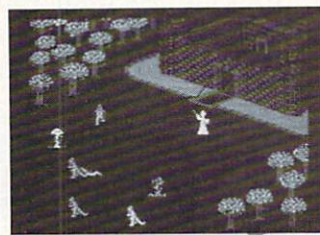


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Gandalf the Sorcerer Sight and Sound for Commodore



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Compatibility with WordStar, MultiMate and Word Perfect has also been developed, so that bibliographies and report data files may be merged directly into word processing programs.

Network requirements, such as sub-database creation and

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